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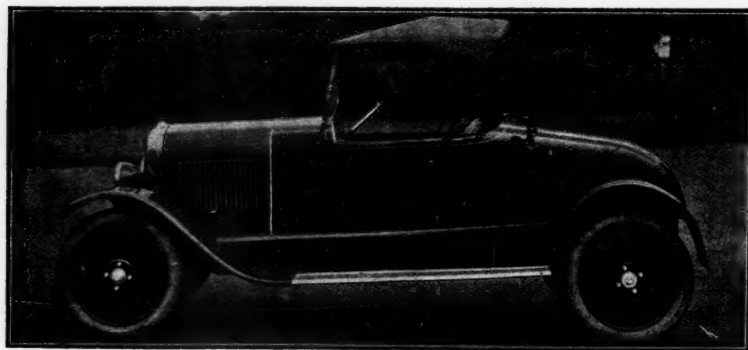
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### A FULMINATING CASE OF LOCAL ANTHRAX INFECTION: WITH NOTES ON ANTHRAX AND ON THE HISTORY OF THE DISEASE IN AUSTRALIA.<sup>1</sup>

By J. BURTON CLELAND, M.D.,  
Professor of Pathology, University of Adelaide,  
Honorary Pathologist, Adelaide Hospital.

THE following case is of interest on account of the absence of a definite malignant pustule at the site of local infection in the neck, the intensity of the œdema which finally involved the glottis and led to death within two and a half days of the presumed time of infection, the associated presence of hæmolytic streptococci and the occurrence of the case in South Australia. It was only after the conclusion of the *post mortem* examination that the probability of the case being one of anthrax infection was realized.

On the evening of August 9 I was requested to carry out a *post mortem* examination next morning on the body of a patient who had just died and who had been admitted the day before with an intense cellulitis of the neck, suggestive of erysipelas. Incisions had been made into the œdematous tissues

and later tracheotomy had to be performed on account of urgent dyspnoea from involvement of the glottis. The operator at the time was not in possession of the fact that the patient had been recently shaved at a barber's shop and that a cut had resulted. The House Surgeon, in asking for permission to have a *post mortem* examination carried out, mentioned that the infection had apparently followed on this cut during shaving. As every day numerous cuts during shaving must take place and as it is exceedingly rare for any grave infective process to develop in such cuts with the exception of anthrax from infected shaving brushes, the natural inquiry was made as to whether the original lesion suggested a malignant pustule. There was nothing, however, in the appearance of the lesion, to suggest a typical anthrax pustule.

During the performance of the autopsy the neck was found to be still intensely œdematous. Watery fluid welled up from the incisions. This was clear and there was evidently little, if any, purulent infiltration. The œdema extended downwards to the lower end of the sternum. The spleen was only slightly enlarged and did not suggest a generalized anthrax infection. Blood had trickled down the trachea from the tracheotomy wound into one lung. The appearances presented were not those usually met with in an intense streptococcal infection as

<sup>1</sup> Read at a meeting of the South Australian Branch of the British Medical Association on August 30, 1923.

the fluid present seemed to be almost devoid of pus cells. It was possible, however, that the condition was a streptococcal infection in which the usual polymorpho-nuclear reaction was in abeyance, owing either to the virulence of the organisms or to the lack of resistance on the part of the patient. The possibility of an anthrax infection was borne in mind, though it seemed clear that if the condition were such, the septicæmic stage had not yet been fully reached. Smears and cultures were accordingly made and the former examined straight away. In smears made from the incisions in the neck a large number of very large Gram-positive bacilli were found and also an equal or greater number of Gram-positive diplococci, occasionally occurring in short chains. Some of the large bacilli morphologically resembled typical anthrax bacilli with square ends and were in long threads. The greater number were somewhat atypical, varied in thickness and had apparently rounded ends; some of the organisms were curled and some showed degeneration. Rather poorly stained violet sheaths were seen round some of the organisms by Geimsa's stain (McFadyean's test). The provisional diagnosis of anthrax was made and the proper authorities notified of the suspicious nature of the case. A guinea pig was inoculated with some of the material from the wound in the neck. Owing to the atypical appearances presented by many of the organisms in the smear it was not considered justifiable to pronounce the case to be a definite one of anthrax until the results of the cultures and guinea pig inoculation were known. It is probable, however, that on the smear alone anthrax might have been diagnosed practically with certainty. Apart from infections of the gas gangrene and war wound type, I know of no condition in which in an intensely oedematous inflamed area large numbers of large Gram-positive bacilli, morphologically resembling anthrax bacilli, are found if *post mortem* putrefactive changes can be excluded. The nature of the original wound in this case and the appearance of the lesions did not in any way suggest an anaerobic gas infection. This could be clinically excluded. Occasionally a phlegmonous inflammation occurs in the neck, the infection being derived from the oral cavity. Fusiform bacilli and spirochaetes may be found in the pus. There was nothing to suggest such an infection in this case. On the other hand intense oedema is what one would expect in an anthrax infection.

How did this patient receive his infection? Anthrax is not now indigenous in South Australia. I do not know whether it is still met with amongst sheep in Queensland. I do not, however, think it probable that this patient brought his anthrax bacilli with him from Queensland and that they were introduced into his skin whilst in Adelaide. He had a pimple on his neck before he went to the barber's shop and he was considered as not looking well at this time. I think it likely that the pimple was an ordinary one and that, projecting somewhat, it naturally came in the way of the razor. I think it highly probable that the shaving brush employed was the source of infection. The

authorities made inquiries at the various shops where he might have been shaved and one brush was submitted for bacteriological examination, but anthrax bacilli were not detected on it. Considering the number of other cases which have developed as a result of the use of infected Asiatic shaving brushes, this seems the most likely source of infection, but if so, the development of the disease was exceedingly rapid. He was shaved presumably on the morning of August 6 and that night his neck was swollen. The next day the swelling was much greater and he was admitted to hospital in the afternoon almost choking. It is probable, then, that the anthrax infection was grafted on to a local ordinary infection. Such a local pimple infection would probably be due to *Staphylococcus aureus*, but might be due to streptococci. It is to be noted that numerous streptococci were present in the smears and proved on cultivation to be hæmolytic. The soil on which the anthrax bacilli were thus implanted would probably form a good nidus for their proliferation. Only thus can we explain the development of noticeable oedema within a few hours of the presumed infection. But for this to occur we must assume that the anthrax bacilli were in the vegetative stage and were fairly numerous on the brush. This condition could easily have been fulfilled, supposing the brush had been used on the Saturday. The dried blood clot containing the anthrax spores attached to the bristles of the brush would be softened and moisture would be present and during the week-end the spores of the organisms could have developed and a considerable increase of the vegetative organisms could have taken place. Then on the Monday when the patient was shaved, a liberal introduction of these active forms might have occurred.

Dr. Turner has kindly given me the following epitome of the history of the patient and of the clinical course of his disease.

J.C., *etatis* fifty-seven years, a drover, arrived in South Australia from Queensland seventeen days prior to admission on August 7, 1923. After his arrival in Adelaide on July 21, 1923, he stayed at a coffee palace in Hindley Street, Adelaide, but on August 4 he went to stay with his niece at Prospect. When he went to Prospect his niece noticed that he was not well. He was pale and had a small pimple on the left side of his neck just below the jaw. On the evening of August 6 his neck was swollen in the region of the "pimple." He told his niece that he had had a shave at a barber's shop in the city that day and that the barber had cut off the top of the pimple. The next day the face was much more swollen. He had no pain, but there was a slight itching in the throat. He was becoming short of breath and later that afternoon appeared to be choking. When he was admitted on the evening of August 7, there was a condition of intense oedema involving the neck on both sides and extending down over the *manubrium sterni* and clavicles for five centimetres. On the left side of the neck 2.5 centimetres below the angle of the jaw there was a small papule with a zone of purplish discoloration around it. The discolored patch was about 0.5 centimetre in diameter. Over the whole of the neck was an erythematous rash and the margin of the redness was sharply defined and slightly raised, and extended across the chest five centimetres below the clavicles. The upper limit of the redness was diffuse and faded on the cheeks. There was marked dyspnoea with an inspiratory stridor. The fauces were oedematous and the uvula much swollen. Slight



cyanosis was present. The pulse was slightly increased, the respirations 28 and the temperature 37.6° C. (99° F.). The swelling of the neck gave a distinct sense of fluctuation. Shortly after admission several incisions were made under ether anaesthesia into the swollen tissues of the neck. No pus was encountered. The whole of the tissues were oedematous and exuded a clear fluid. The incisions relieved the dyspnoea and he felt easier. On the following afternoon he was slightly cyanosed and becoming increasingly dyspnoeic. A tracheotomy was performed. He died two hours after. Clinically the case appeared to be one of erysipelas and was treated as such.

#### Post Mortem Examination.

The neck was considerably swollen and showed several incisions into the subcutaneous tissue on both sides of the neck and extending towards the chest and also a central tracheotomy wound. The skin was somewhat discolored over the most swollen area on the left side of the neck. On section an intense watery oedema was seen in the tissues of the neck, affecting more particularly the left side and extending over the front of the chest as far as the xiphoid process, though in diminishing amount. A considerable amount of watery oedematous fluid collected in the usual incision made over the sternum and the muscular tissue when incised dripped with oedematous fluid. There was a collection of gelatinous fluid in the superior mediastinum. All this oedematous fluid was nearly clear and did not suggest the presence of any considerable number of leucocytes in it. There was some swelling and congestion of the larynx, affecting more particularly the left true vocal cord. The oesophagus was also a little congested at its commencement. The left lung in its lower part posteriorly was infiltrated with dark, inspired blood which had apparently trickled down the trachea from the tracheotomy wound and had filled the pulmonary tissues except over a narrow area 1.2 centimetres in thickness at the periphery where the air in the lung tissue had been driven as the blood filled the bronchioles. The spleen was a little softer than normal, bright red in colour and a little enlarged. The gall bladder was distended with bile and contained a few small stones. There was slight congestion of the brain. The kidneys, suprarenals, pancreas, stomach, duodenum, bladder, prostate and intestines appeared normal.

#### Bacteriological Examination.

Smears from the oedematous fluid in the neck near the site of the original infection yielded numerous long Gram-positive threads of anthrax-like bacilli. The ends of some of the bacilli were square, the protoplasm was often granular and in some places had disappeared, leaving an empty sheath stained by the fuchsin. Occasional spores were seen. A number of the organisms were less typical, presenting ends which seemed rounded. They also varied in thickness. Occasionally the large bacilli appeared in S-shaped loops. Gram-positive diplococci, occasionally occurring as short streptococcal chains, were as numerous as if not more numerous than the large bacilli. One clump of Gram-negative bacilli was met with. Hardly any cells were present in the smear. In a smear

stained by Giemsa's method the presence of poorly-defined violet sheaths was noted (McFadyean's test).

In a smear from the fluid welling up from the incisions over the centre of the sternum there were occasional Gram-positive diplococci and one short chain of square-ended large bacilli. It is possible that these organisms had been carried to this situation by the knife.

Cultures made on nutrient agar from the fluid in the neck yielded in twenty-four hours typical fluffy anthrax colonies. Microscopically the organisms were in long chains and the individual bacilli were square-ended, Gram-positive and non-motile. On blood agar streptococcal colonies were also numerous and these were later found to be haemolytic. No anthrax colonies were found in cultures from the spleen.

A guinea pig inoculated with some of the oedematous fluid from the neck died in about thirty-six hours. An intense haemorrhagic oedema was present at the site of inoculation, as were an excess of fluid in the peritoneal cavity, an enlarged haemorrhagic spleen and haemorrhagic suprarenals. Very numerous typical anthrax bacilli were present in the spleen, liver and heart's blood and pure cultures were obtained from the spleen and heart's blood. A second guinea pig, inoculated with the culture obtained from the neck before the first guinea pig had died, was found dead on the morning of the fifth day. There were similar lesions to those in the first pig, though not quite so pronounced and the numbers of bacilli in the smears seemed fewer. Pure cultures were again obtained from the spleen and heart's blood. From a shaving brush, thought possibly to be the source of infection, fluffy colonies developed. Microscopically these appeared to be non-motile and from their morphology anthrax could not be excluded. They failed, however, to have any effect when inoculated into guinea pigs and later the sub-cultures presented a somewhat wrinkled appearance.

#### The Source of Infection.

As showing the difficulty sometimes experienced in tracing the source of infection in anthrax, the following case may be worth mentioning. To my mind it shows also the fallibility of judges. A man, engaged in reconditioning spoilt wheat after the mouse "plague" in New South Wales, developed whilst at work in Sydney a malignant pustule in the neck from which he died. The widow claimed compensation from the Government who had been his employer. The case came up for trial before a judge (who has since died). The plaintiff based her claim on the following points. The man carried bags of wheat across his shoulders from one spot to another. He thought that a prickle in one of the bags had irritated his neck and that from this the pustule had started. The inference drawn was that anthrax bacilli must have been present in the bag or its contents. To get there it must be assumed that some chain of events such as the following had occurred. Sheep had died in the field from anthrax. Mice had eaten part of the infected carcase. They

or others infected from them had then gravitated to a wheat-stack, had died there and had infected the grain. The grain had then been railed to Sydney and later had infected the bag and the man. Or, alternatively an anthrax-infected sheep had died near a wheat stack or in a field of wheat, or in some way at the country station or on the way to Sydney or in Sydney an anthrax sheep-hide or ox-hide had contaminated the wheat or the bag. Such a round-about method of infection seems, however, to be extremely unlikely. I was required to give evidence on behalf of the Crown. The lesion in the neck was within the shaving area. Attention had at that time just been drawn to human infections from shaving brushes. The man had been shaved at a suburban barber's shop about forty-eight hours before he first complained of symptoms. The most reasonable explanation of the origin of the case seemed to me to be this shave. It was, however, too late to detect the presence of infection in the brush, if the latter could have been traced. No other cases were known to have occurred about this time. I gave evidence along these lines, attributing the history of a supposed thistle-prick from the bag to the lesion being in course of development and so causing irritation. The judge seemed to consider that my evidence was "special pleading" on behalf of the Crown, as I was a Government officer. Judgement was given for the plaintiff, but on the balance of evidence to my mind wrongly.

#### The Possible Transmission of Anthrax by Flies.

The possibility of anthrax infection being spread by flies has occurred to a number of investigators. In the historical notes appended to this paper it will be seen that Dr. Milford in 1891 referred to persons in Sydney having been stung by flies and malignant pustules having developed. The fly responsible must in this case have been almost certainly the stable fly (*Stomoxys calcitrans*) so common round cattle and horses. As this is a blood-sucking fly, the method of conveyance can easily be surmised. Some years ago when in Sydney it occurred to me that the common bush fly (*Musca vetustissima*) might also be capable of spreading infection. This fly like the common house fly (*Musca domestica*) is not a blood-sucker in the ordinary sense. It feeds on moist surfaces and during hot weather annoys us intensely by seeking nourishment from our eyes. It infests animals in the same way and delights also in imbibing blood from wounds or even from the punctures made by true biting flies. It glories in an opened carcase. If it ingested material from blood-stained discharges from anthrax-infected animals, then it might conceivably carry the organisms to the eyes or mucous membranes of healthy animals and so infect them. It might even imbibe the dried blood from anthrax carcasses. To test its capacity to do the latter, two smears of anthrax blood were made and allowed to dry completely. One was then placed in a large test-tube with one of the flies. Examined some little while later, sinuous clear tracks were seen traversing the dried film where the salivary secretion of the fly had loosened the blood and enabled the fly to ingest it. The fly specks on the side of the jar

were at first pallid but later dark, through the presence of altered blood. Anthrax bacilli were grown from these faecal blood-specks and the body of the fly killed a guinea pig on inoculation. This fly is capable, therefore, of ingesting dried anthrax blood and of passing living anthrax organisms afterwards in the dejecta. It is a possible means of infection of man and animals.

#### Anthrax in Australia.

The history of anthrax in Australia is very interesting. At one time the disease led to enormous losses amongst sheep and cattle have also died from the disease. To minimize the losses in sheep protective inoculation was introduced and is still practised in places even at the present time. This expensive procedure is considered justified as it has led to a lessened mortality. In 1889 Mr. W. M. Hamlet, Government Analyst for New South Wales, outlined the history of the disease in Australia<sup>(1)</sup> and in 1912 I gave an epitome of the history of the disease from the human aspect up to that date.<sup>(2)</sup> The disease first appeared at least in an identifiable form in 1847 near Liverpool in the county of Cumberland, New South Wales. From this origin it received the name of "Cumberland disease" in that State and in Victoria was called the "new disease." In Therry's "Reminiscences"<sup>(3)</sup> it is stated that about the year 1848 the Cumberland disease killed an immense number of sheep and cattle and that many men who skinned the animals, died as a result. During the succeeding years losses were great and various reports were submitted dealing with the disease. In 1851 a New South Wales Commission considered the disease as similar in all respects to the *Maladie du Sang* of France. In 1868 Mr. Gordon, Chief Inspector of Stock for Queensland, became satisfied as to the identity of the Cumberland disease with anthrax. In 1888 Pasteur's representatives arrived in Australia with the object of introducing protective inoculation against the disease. In 1891 one of these, M. Adrian Loir, read a paper on anthrax infection before the Royal Society of New South Wales.<sup>(4)</sup> In this he mentions that the estimated losses in Australia from anthrax were 200,000 sheep a year, but he believed the losses were really much greater. The mortality in sheep was higher than in France, ranging in some places from 25% to 35%. Some experiments he had performed showed that driving sheep tended to hasten death in anthrax infection. As an outcome of Pasteur's work, McGarvie Smith and Gunn eventually developed a very successful method of protection by a single inoculation, which is practised to the present day.

The case of anthrax here reported is not the first instance of the occurrence of the disease in South Australia. Mr. Hamlet states that in 1876 Archibald Park was at Mount Gambier investigating the disease from which we may infer that cases were occurring there in sheep. In 1906 an outbreak of anthrax occurred on a dairy farm at Islington near Adelaide and eight cows died.<sup>(5)</sup> The manager of the dairy farm who performed the *post mortem* examination on one of these, inoculated himself on both arms. The pustules were excised and he recovered.

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Anthrax bacilli were definitely identified. Dr. Angus Johnson, in reporting on the outbreak, stated that anthrax had been endemic in South Australia for some years past and that Professor Watson was of the opinion that many cases of supposed poisoning by noxious weeds were really examples of anthrax. Dr. Johnson stated that this case was the third human one that he had seen in South Australia since 1904.

#### Human Infections.

The following are records of the disease which have appeared since the publication of my historical résumé of the subject in 1912, to which reference has already been made, or are instances of the disease overlooked or not known to me at that time.

Mr. Moore in a discussion on a paper by M. Adrian Loir<sup>(1)</sup> said that looking back about thirty-five years the first cases of anthrax in animals in Australia were noticed at Fullagar's on the Parramatta Road. This is not in accord with Mr. Hamlet's statement that the first cases occurred in 1847 at Leppington, near Liverpool, New South Wales. Mr. Moore also referred to sheep dying at Cassilis, Busby's Station, and on the Liverpool Plains. Dr. Milford said he had known of several cases of persons in Sydney being stung in the face by flies, thereby producing anthrax or malignant pustules.

In the *Australian Medical Journal* for 1856<sup>(2)</sup> there is reference to a disease communicated from cattle, the disease (obviously anthrax) having appeared about five years previously near Camden.

An old farmer, Mr. T., whom I met in New South Wales some years ago, informed me that he developed a malignant pustule in 1864 a week after shearing sheep.

In 1872 a case of malignant pustule under the care of Dr. G. Bennett was reported by F. Milford.<sup>(3)</sup> The patient, a woman at Woolloomooloo, had been seen on December 6, 1871. A dry, hard slough the size of a three-penny piece was present on the left side of the mucous membrane of the upper lip and was surrounded by an inflamed area the size of half a crown. There were no constitutional symptoms. The slough was removed by a bistoury. Gradual recovery followed. This case does not seem very definite.

In 1914 Dr. C. Duguid<sup>(4)</sup> described a case of multiple malignant pustules in a farm labourer, aged twenty-six, who had been shearing lambs in November, 1913. The patient was removed to Warracknabeal Isolation Hospital and recovered. Anthrax bacilli were seen in smears and afterwards cultivated by Dr. Bull at the University of Melbourne. The patient had developed pimples on the arm, at first thought by him to be "yolk-boils" from shearing. When seen by Dr. Duguid his temperature was 39.2° C. (102.6° F.). He presented no less than sixteen typical malignant pustules on the left hand and forearm and two on the back of the right hand. The left arm was swollen and firm though not to any marked extent. He fainted in the surgery. The lesions were treated by injecting carbolic acid into and round the sores.

In 1915<sup>(5)</sup> two cases of malignant pustule are recorded, one from a man in Sydney who worked in a hide and wool store and the other patient at Tamworth.

At a meeting of the Western Australian Branch of the British Medical Association on May 16, 1917,<sup>(6)</sup> Dr. G. W. Barker read notes concerning a patient with anthrax who had been admitted to the Perth Hospital. Dr. Shearman detailed the results of inoculating a guinea pig. Apparently infection from shaving brushes was suspected. Dr. Trethowan recalled a case which had occurred in a man working in a tannery at Perth.

In 1919 at a meeting of the Queensland Branch of the British Medical Association on October 3,<sup>(7)</sup> Dr. Cameron exhibited cultures of anthrax bacilli from the face of a woman, the cultures having been obtained after guinea pig inoculation. The patient had recovered after excision and the application of the cautery.

In 1920, at a meeting of the Australasian Medical Congress in Brisbane, Dr. E. W. Ferguson<sup>(8)</sup> read a paper on anthrax infection from shaving brushes. One case had occurred in Sydney in June, 1920, and was traced to the use of a new Japanese shaving brush. Anthrax bacilli were grown from the brush. A second case occurred at Glen Innes and five more cases had occurred within the last five months, in all of which the infection could be traced to shaving brushes. Nine out of two hundred and seven shaving brushes collected from various sources were found infected. In the discussion that followed, Dr. W. J. Penfold referred to one case of anthrax that had occurred in the Melbourne Hospital and Dr. N. H. Fairley to a case described by him later. Dr. R. C. E. Atkinson mentioned that some cases had occurred in Western Australia a few years ago, of which two were definitely traced to shaving brushes. The consignment of brushes was found to be infected.

In 1920 Dr. E. W. Ferguson<sup>(9)</sup> reviewed the cases of shaving brush infection to which he referred at the Medical Congress, added fourteen others and gave the results of his examination of numerous Japanese shaving brushes. The cases specially described at the Congress were three (the country case is here given as from Tamworth in October, 1919, the Glen Innes one being included in the new series). The fourteen patients came from the Sydney district and from various country localities (Glen Innes, Wodonga in Victoria, June, Carcoar and Canley Vale). In most of the cases it was ascertained that a new shaving brush had been used. Anthrax infection was detected amongst the stock shaving brushes examined. A method of sterilizing possibly infected shaving brushes with "Formaldehyde" (5% "Formaldehyde," *id est* 12.5% formalin, at a temperature of 55° C. for half an hour) is recommended.

N. Hamilton Fairley<sup>(10)</sup> describes a Victorian case of a malignant pustule on the neck "within the shaving area" and attributed to an infected brush. The patient became rapidly ill and died. There were swollen, soft, hæmorrhagic lymphatic glands in the neighbourhood of the lesion. Apparently anthrax



bacilli from the neck lesion had been swallowed and had caused foci of hæmorrhage, pustules and areas of ulceration from the duodenum to the rectum with œdema of the mesentery and œdema and engorgement of the mesenteric glands.

In 1921 Dr. Hedley Brown, Brisbane,<sup>(18)</sup> described a fatal case of infection in the neck, in which anthrax bacilli were cultivated and were also obtained from the shaving brush and Dr. C. Weedon, Brisbane,<sup>(19)</sup> refers also to this case. The malignant pustule was excised, but the patient died.

In 1920 Dr. R. J. Millard, of the Coast Hospital, Sydney,<sup>(20)</sup> in an article on the treatment of anthrax, gave details of the illness of seven patients all of whom recovered. Three of these were cases of anthrax within the "shaving brush area" and were attributed to infection from shaving brushes. The other four were in other parts and attributable to other sources of infection. In 1922 Dr. Millard described three further cases of infection from shaving brushes;<sup>(21)</sup> all of the patients recovered. He mentioned that during 1921 three patients were treated for anthrax at the Coast Hospital and in January, 1922, another case occurred in addition to the three described in this paper.

#### References.

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#### SOME EFFECTS OF CARBO-HYDRATE DEPRIVATION UPON PANCREATIC FUNCTION.\*

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It has long been known that if any individual fasts or merely eliminates carbo-hydrates from the food, the odour of acetone appears in the breath and acetone, diacetic acid and  $\beta$  hydroxybutyric acid are excreted in the urine. Delicate tests show that minute amounts of these "acid bodies" are present in normal urine, but Hirschfeld in 1895 first pointed out that the amounts are greatly increased when the quantity of carbo-hydrate being metabolized is small. The term "ketonuria" is applied to the condition when sufficient acetone and diacetic acid are present to give reactions to Gerhard's ferric chloride test or Rothera's nitro-prusside test.

Ketonuria occurs more rapidly and to greater degree in an individual who withdraws carbohydrate from his diet, but continues to take fat and protein, than in one who fasts completely. Woodyatt<sup>(1)</sup> and others have shown that there is no essential difference between the acidosis induced by unbalanced dieting in a normal individual and that found in association with pathological conditions, such as *diabetes mellitus*. Ketonuria, whenever and however produced, is a sure indication that abnormally small amounts of carbo-hydrate are being burned. The recent work of Shaffer<sup>(2)</sup> shows that if the energy requirements of the body are being provided for by the metabolism of a dietary containing not less than 10% of carbohydrate, about 10% of protein and not more than 80% of fat, no ketonuria is produced. These amounts mark, as it were, a threshold: the burning of relatively less carbo-hydrate or of relatively more fat produces ketonuria. The complete combustion of fats in the body gives carbon dioxide and water. Among the intermediary products are diacetic acid and  $\beta$  hydroxybutyric acid. The fats are only completely burnt when a certain (and probably definite) amount of sugar is burnt simultaneously. If the sugar intake is insufficient to meet this need or if the power of the body to burn sugar is impaired, fat combustion is incomplete. The intermediary "acid bodies" enter the blood stream and this state of ketosis (or ketonæmia) at once leads to ketonuria.

#### Carbo-hydrate Starvation.

Four years ago when working on the subject of acidosis, the writer underwent carbo-hydrate starvation on several occasions for periods varying from thirty-six hours to three days. It was with the idea of observing the general effects and especially the urinary changes associated with moderate degrees of ketosis that the method of inducing ketosis by carbo-hydrate deprivation was selected for study.

Table I. illustrates the results of urine analyses over a period of eight days, during three of which

\* Read before the Medical Science Club of South Australia on August 3, 1923.



the diet consisted solely of fat and protein, save for one unintentional lapse.

Table II. is a detailed statement of portion of Table I. When ordinary diet was resumed on March 6, the urine was collected in eight-hour amounts. The sudden appearance of glycosuria and the rapid clearance of this and of the ketonuria are strikingly shown.

Table III. gives the urinary changes consequent upon carbo-hydrate deprivation for a period of only thirty-six hours. The results are essentially the same as those obtained with longer periods of similarly unbalanced dieting.

Six of these dietary experiments were carried out, the conditions being slightly modified in each case. The results noted were as follows.

#### *Subjective Symptoms.*

Malaise and nausea were experienced within twenty-four hours of withdrawing carbo-hydrate. Headache and a feeling of fatigue generally occurred. Vomiting occurred twice. It is difficult to estimate to what degree these symptoms were psychic in origin.

#### *Ketonuria.*

Within twenty-four hours the nitro-prusside reaction was strongly positive. The ketonuria rapidly increased until normal diet was resumed. Within six hours of resuming ordinary diet only traces of "acid bodies" were found.

#### *Increased Acidity of the Urine and Increased Ammonia Output.*

Provided no alkali is being administered these conditions are found whenever acidosis with ketonuria occurs. The total titratable acidity of the urine is a rough clinical measure of the degree of ketosis, while the total ammonia excretion is a fairly accurate index. The ammonia coefficient (the ratio of ammonia nitrogen to urea nitrogen) is not as valuable a guide as the total quantity of ammonia. On the day following resumption of normal diet urinary acidity and ammonia excretion were normal.

#### *Glycosuria.*

This occurred on each occasion on resuming ordinary diet. It was of a transient nature. Urine passed during the first three or four hours after the mixed meal contained appreciable amounts of sugar; from then on only traces appeared and within twenty-four hours none could be detected.

#### *Relief of Nausea and Malaise.*

This followed almost immediately after the first ordinary meal.

#### *The Effect of Alcohol.*

Alcohol failed to take the place of carbo-hydrate in aiding the complete burning of fats. Slightly less ketonuria occurred while alcohol-fat-protein diet was being taken, but there was less rapid clearing

TABLE I.

Date.	Diet.	Acetone.	Diabetic Acid.	Sugar.	Total Titratable Acidity.	Ammonia Excretion (Grammies).	Remarks.
March 1, 1920 ..	Ordinary mixed	0	0	0	377	0.6	—
March 2, 1920 ..	Ordinary mixed	0	0	0	270	0.6	—
March 3, 1920 ..	Fat-protein	+	Trace	0	380	0.8	Slight headache and nausea
March 4, 1920 ..	Fat-protein	++	+	0	1036	2.0	Vomited once in morning.
March 5, 1920 ..	Fat-protein	++	+	0	668	1.4	Unintentionally transgressed by eating a candied fig
March 6, 1920 ..	Ordinary mixed	++	+	+	670	1.6	(hence fall of acidity and of ammonia excretion).
March 7, 1920 ..	Ordinary mixed	0	0	0	262	0.6	—
March 8, 1920 ..	Ordinary mixed	0	0	0	403	0.6	—

TABLE II.

Date.	Time.	Acetone.	Diabetic Acid.	Sugar.	Remarks.
March 6, 1920 ..	7 a.m. to 3 p.m.	++	++	+	This specimen of urine showed 0.5% of sugar; the total sugar content was 2.3 grammes.
	3 p.m. to 11 p.m.	Trace	Trace	Trace	—
March 7, 1920 ..	11 p.m. to 7 a.m.	0	0	Very slight trace	—

TABLE III.

Date.	Diet.				Acetone.	Diacetic Acid.	Sugar.	Total Titratable Acidity.	Ammonia Excreted (Grammes).	Remarks.
	Protein.	Fat.	Carbo-hydrate.	Calories.						
April 25, 1920 ..	—	—	—	—	0	0	0	250	0.55	Ordinary mixed diet (not measured).
April 26, 1920 ..	81.5	89	0	1327	+	Trace	0	630	0.9	—
April 27, 1920—	—	—	—	—	++	+	+	645	1.0	Ordinary diet, unmeasured. Urine collected in 12-hourly amounts.
(a) .. ..	—	—	—	—	Trace	0	0			
(b) .. ..	—	—	—	—	—	—	—	—	—	—

TABLE IV.

Date.	Diet.				Acetone.	Diacetic Acid.	Sugar.	Total Titratable Acidity.	Ammonia Excreted (Grammes).	Am—N. Urea—N. (Approx.).	Remarks.
	Protein.	Fat.	Carbo-hydrate.	Calories.							
July 10, 1921	110	126	275	2762	0	—	0	161	0.65	1:20	Urea estimations done by Doremus method, hence ammonia coefficient only approximate.
July 11, 1921	110	126	275	2762	Slight trace	0	0	200	0.66	1:20	
July 12, 1921	78	122	0	1480	++	+	0	293	0.8	1:18	—
July 13, 1921	78	122	0	1480	+++	++	0	652	1.4	1:14	
July 14, 1921	—	—	—	—	++	Trace	0	706	2.1	1:10	Ordinary mixed diet, not measured.
July 15, 1921	—	—	—	—	Trace	0	0	312	1.1	1:13	—

TABLE V.

Date.	Diet.	Acetone.	Diacetic Acid.	Sugar.	Urea (Grammes).	Ammonia (Grammes).	Ammonia—N. Urea—N.	Remarks.
July 9, 1923—	Ordinary mixed	0	0	0	10	0.34	1:19	Diet consisted only of bacon, meat and three eggs.
a.m. .. ..		0	0	0	14	0.39	1:22	
July 10, 1923—	Ordinary mixed	0	0	0	11	0.33	1:22	Total sugar excreted was 1.2 grms.
a.m. .. ..		0	0	0	11	0.36	1:20	
p.m. .. ..	Carbo-hydrate free	Trace	Trace	0	12	0.33	1:20	
July 11, 1923—		++	++	0	7.5	0.38	1:11	
a.m. .. ..	Ordinary mixed	++	Trace	+	20	0.91	1:12	
July 12, 1923—		Trace	0	Trace	14	0.54	1:14	
a.m. .. ..	—	—	—	—	—	—	—	
p.m. .. ..		—	—	—	—	—	—	

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of the condition when ordinary diet was resumed. Administered in diabetes as a substitute for carbohydrate food, alcohol would appear to be of little value.

#### The Effect of Thyroid Gland.

The degree of ketosis was increased by ingesting thyroid gland tablets for a few days before and during the period of carbohydrate starvation.

Other observations were made. The nitroprusside test (Rothera) is applicable to blood serum.

Determination made by Sellards's method<sup>(4)</sup> showed no definite fall in the alkali reserve of the blood nor would any fall be expected from acidosis of such short duration.

#### Glycosuria Appearing on Resumption of Full Diet.

The occurrence of glycosuria on breaking the carbohydrate fast was the most unexpected of these observations. Its discovery was somewhat disturbing from the personal aspect, for it was thought possible that the abnormal dietary had revealed a latent tendency to diabetes or at least a state of low sugar tolerance. A test of the glucose tolerance was made by drinking a solution of one hundred grammes of commercial glucose. In individuals whose tolerance is low, this is sufficient to induce a transient glycosuria. In the personal test made no trace of sugar was detected.

Here was an individual, then, who had never shown symptoms indicating diabetes, whose sugar tolerance was apparently normal, whose heredity suggested no liability to diabetes, but who invariably showed glycosuria under a certain definite dietetic régime. Professor T. Brailsford Robertson, under whose notice the subject was brought, knew of no previous observations on the point and at his suggestion a small group of students was selected for experiment. These four healthy young men were subjected for two days to a measured balanced diet and then for two days to a measured fat-protein diet. In all four the results of carbohydrate starvation were similar to the results of the writer's personal experiments. Ketonuria appeared within twenty-four hours of withdrawing carbohydrate. The total ammonia excretion increased from a normal average of 0.7 gramme *per diem* to 1.4 grammes, the maximum amount being 2.1 grammes. The only condition found in the personal experiments which failed to appear in this series, was glycosuria on resuming ordinary diet.

Table IV. is representative of the results obtained in the four subjects.

The explanation of the absence of glycosuria in these subjects appeared to be either that (i.) the writer possessed some peculiarity in his metabolism or (ii.) some material difference existed in the conditions of the experiments. Careful consideration of the latter point showed the only difference in conditions to be the fact that the students were comparatively overfed, especially with protein, during the two days preceding carbohydrate starvation. Seeing that protein can in the course of its metabolism in the body make available so

much glucose, *videlicet* 3.6 grammes of glucose per gramme of nitrogen, it was thought possible that the condition of protein overfeeding might affect the results.

The writer recently carried the investigation a step further by applying to himself Maclean's test for glucose tolerance.<sup>(5)</sup> Three hours after an ordinary mixed meal, containing only a moderate amount of carbohydrate, urine is passed and tested for sugar and the sugar concentration in the blood is estimated. Fifty grammes of ordinary commercial glucose with one hundred and fifty cubic centimetres of water is then ingested and blood sugar estimations are made at half-hourly intervals for two hours. Urine is passed at the end of each hour and tested for sugar. The graph obtained on plotting the blood sugar estimation should show a rapid rise from about one hundred milligrammes of glucose or less per hundred cubic centimetres blood before taking the drink of syrup to one hundred and forty or one hundred and fifty milligrammes at the end of the first half-hour period; then a fairly rapid fall should occur and at the end of the second hour the sugar concentration should again be in the neighbourhood of one hundred milligrammes per hundred cubic centimetres of blood. Maclean states that the sugar concentration after two hours is frequently below that found before the glucose is taken. In diabetic subjects the

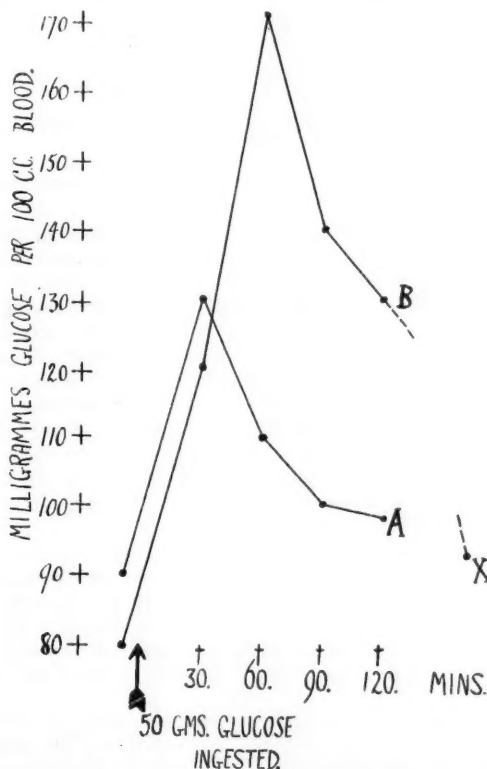


FIGURE 1.

A.R.S.—Curve A is the normal tolerance curve, B the curve obtained after carbohydrate starvation. X = level of blood sugar five hours from beginning curve B, an ordinary meal intervening.

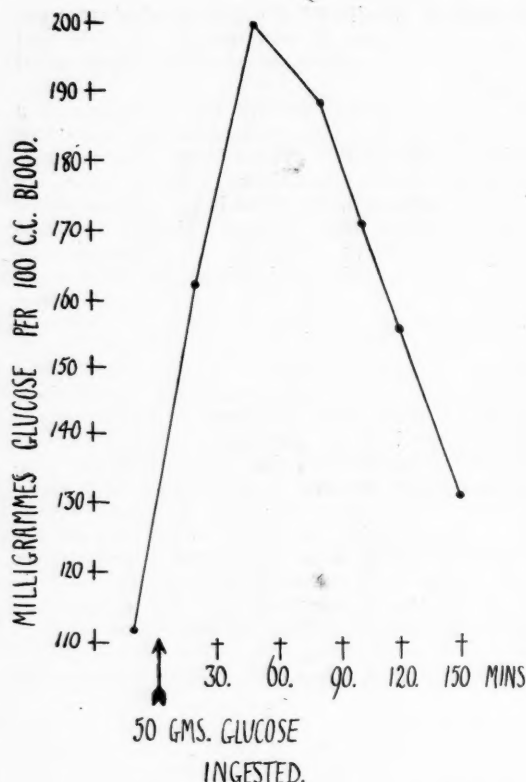


FIGURE II.  
Reproduced (with modified scale) from Maclean's  
"Modern Methods, Etc."

curve generally ascends to a much higher level and the fall is greatly delayed.

In Figure I. the curve A is that obtained in the personal test. It is normal in every respect demanded by Maclean. No glycosuria occurred.

It was then decided to make a similar test of the glucose tolerance after withdrawing carbohydrate from the diet for thirty-six hours. This was done. At the end of the period the blood sugar concentration was estimated and the carbohydrate fast was then broken by the drinking of syrup containing fifty grammes of commercial glucose.

The curve B in Figure I. depicts the result of this second tolerance test. Some striking differences from the normal curve are noted.

(1) Although the rate of ascent of sugar concentration is parallel in the two tests, the second test shows a much higher rise, namely to 170 milligrammes per 100 cubic centimetres blood. The excursion of the curve B more than doubles that of curve A; B rises from 80 to 170, A from 90 to 130.

(2) The maximum sugar concentration is not attained till one hour after the taking of the glucose in the second test.

(3) The fall of sugar concentration is greatly delayed in the second test and corresponds to the diabetic type.

(4) Glycosuria occurred in the course of the second test. None occurred in the first.

Figure II. shows a curve obtained from applying Maclean's test to an individual suffering from mild diabetes. It is reproduced from Maclean's book<sup>(2)</sup> in order to show its resemblance to curve B in Figure I.

Table V. gives the results of urinary analyses carried out in connexion with the tolerance tests. Twelve-hour samples were tested. Ketosis and the subsequent glycosuria occurred as in the earlier dietary experiments.

Similar tolerance tests under identical conditions were carried out on each of three medical students who kindly responded to a call for volunteers. Figures III., IV. and V. illustrate the results. In each case the curve A is that obtained from the tolerance test carried out under ordinary conditions; curve B is that obtained when the tolerance is tested after a thirty-six hour period of carbohydrate starvation. The point X indicates the sugar concentration in the blood five hours after beginning test B, an ordinary mixed meal having been taken in the middle of this period.

The subject of Figure III. shows a normal curve A; there was no glycosuria. His curve B is distinctly of the diabetic type; greater excursion than the normal, delayed attainment of the maximum

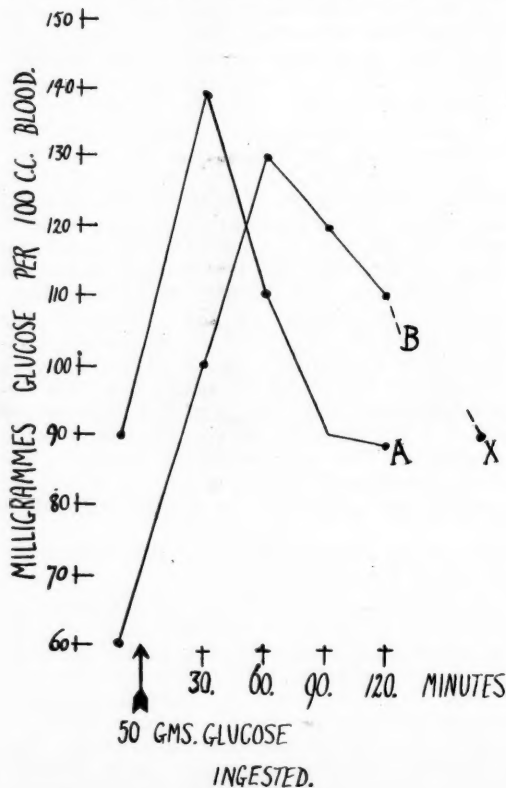


FIGURE III.  
Student S.—Curve A obtained under ordinary conditions,  
B after carbo-hydrate starvation.



and delayed fall to the normal level. There was slight glycosuria in each one-hour sample. This is a curious circumstance in view of the maximum sugar concentration recorded being only one hundred and thirty milligrammes. Probably the actual maximum was attained at a period between the taking of blood samples and was greater than the amount recorded; at any rate the renal threshold was exceeded sufficiently to permit a slight glycosuria.

In Figure IV. similar curves obtained from the second student are shown. In this case, however, there was no glycosuria. Curve B represents the increased excursion and delayed fall characteristic of the results obtained in mild diabetes.

The third student provided curves of a different type. The curve A, obtained by applying the tolerance test under normal conditions, is of a peculiar nature: the ascent is sluggish, the maximum level is seen to be at the ninety minute period and a trace of sugar appeared in urine secreted during the second hour. He thus manifests a low tolerance for sugar. His curve B is practically identical with curve A.

#### The Effect of "Insulin."

It was thought desirable to investigate any effect an injection of a dose of "Insulin" might have in modifying the glucose tolerance curve obtained after carbo-hydrate starvation. The writer again deprived himself of carbo-hydrate food for thirty-six hours. After a sample of blood was taken fifty

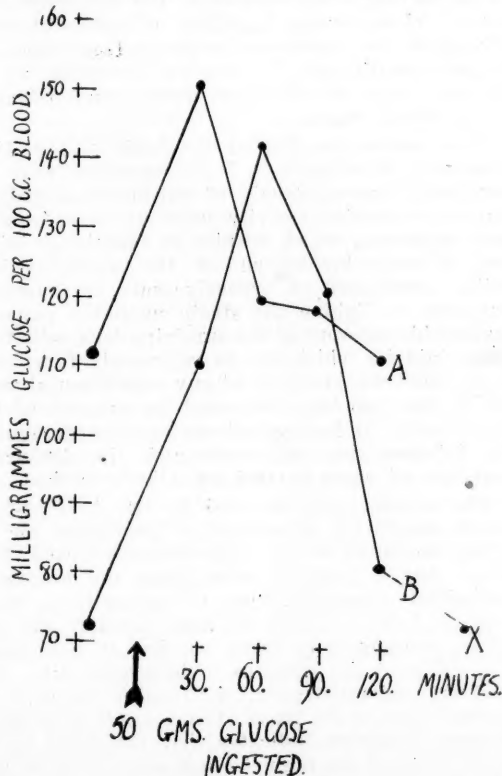


FIGURE IV.—Student G.

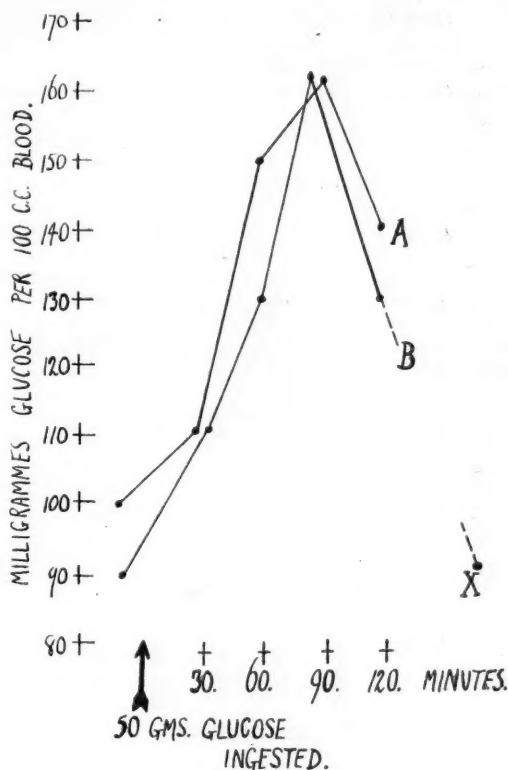


FIGURE V.

Student C.—Curves obtained before and after carbo-hydrate starvation identical in type. This subject possesses a low tolerance for carbo-hydrate.

grammes of glucose (as syrup) was ingested and a dose (three new-style units) of "Insulin" injected subcutaneously. In Figure VI. curve C depicts the results. Curves A and B are reproduced from Figure I. for comparison. How closely curve C approximates to the normal curve is readily apparent. More noteworthy still is the fact that no glycosuria was detected, the only occasion in the course of eight personal experiments where it failed to appear!

#### Summary.

It would appear from the experiments above described that:

(1) In addition to its effect in producing ketosis, carbo-hydrate deprivation temporarily diminishes the ability of the tissues to store glucose with rapidity.

(2) The delay in storage so induced is subject to individual variation.

(3) In some persons the delay may be sufficiently great to allow the sugar concentration in the blood to exceed the renal threshold for sugar and a transient glycosuria occurs.

(4) If at the time of breaking the carbo-hydrate fast an injection of "Insulin" be given, the rise of sugar concentration is not so great and glycosuria is prevented.

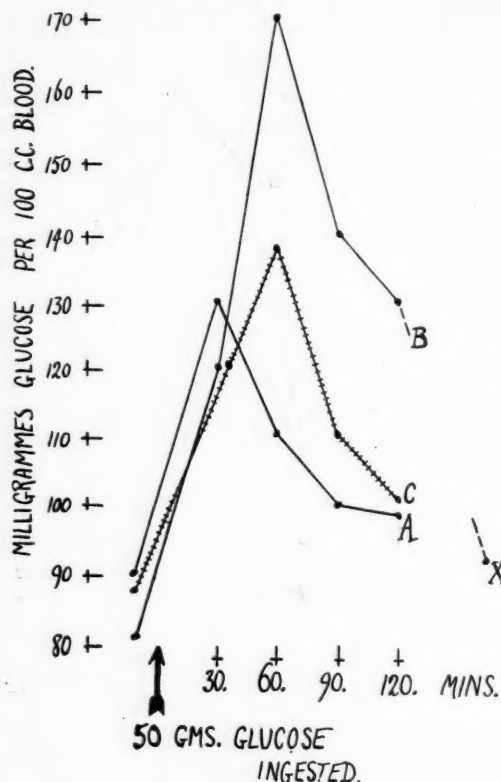


FIGURE VI.

A.R.S.—Curve C was obtained with the glucose plus "Insulin" test after carbo-hydrate starvation. Curves A and B as in Figure I.

#### Acknowledgments.

The writer is indebted to Professor T. Brailsford Robertson for extremely helpful suggestions and criticism and for the subjoined commentary. Dr. Constance Finlayson, of the Adelaide Hospital Bio-chemical Department, very kindly performed the blood analyses and a large portion of the urinary analyses. The students, selected from a score of volunteers, enthusiastically cooperated in the experimental work.

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#### Comments.

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It is generally assumed that the fall in blood sugar concentration which begins in normal persons in from half an hour to one hour after the

ingestion of fifty or one hundred grammes of glucose is attributable chiefly to stimulated synthesis of glycogen. It is certain, however, that part of the fall is due to increased oxidation of sugar, since, as Bornstein and Holm have recently shown<sup>(1)</sup> after glucose is taken, the blood sugar begins to rise immediately, whereas the rise of the respiratory quotient towards the value for carbo-hydrates (unity) exhibits a definite latent period of from one half-hour to one hour. In other words, increased oxidation of sugar occurs just at the time when the fall of blood sugar is beginning and there can be little doubt that the two phenomena are correlated. The same condition which permits a more rapid oxidation of glucose, may in fact also permit its more rapid synthesis into glycogen. This view has recently been put forward by Foster<sup>(2)</sup> who points out that galactose which is known to be a poor glycogen-former, causes a far higher and more persistent hyperglycemia than glucose.

In any case, to whatever causes the fall of blood sugar may be due which succeeds the initial rise after ingestion of carbo-hydrates, it is evidently controlled by the internal section of the pancreas. It is greatly delayed in diabetes and this delay may be abbreviated by administration of "Insulin." The administration of "Insulin" is also followed by the rise in the value of the respiratory quotient which in the normal individual accompanies the fall of the blood sugar level.<sup>(3)</sup> This being the case, it is inviting to infer that the hyperglycemia which follows upon ingestion of carbo-hydrates, stimulates the pancreas to produce or release a larger quantity of its internal secretion which, in turn, leads to enhanced storage and oxidation of the blood sugar.

This assumption lies at the basis of the Allen treatment of diabetes. It is supposed that the continued hyperglycemia of uncontrolled diabetes imposes excessive activity upon an already damaged pancreas, which results in functional injury and ultimate breakdown of the surviving islet cells. Avoidance of hyperglycemia is conversely supposed to lighten the strain upon the pancreas and enable recovery of the surviving islet cells from those injuries which are as yet merely functional. I am unaware, however, of any experimental proof which has yet been advanced in support of this hypothesis. It has gained credence on account of its inherent reasonableness and the favourable response of cases treated by Allen's method.

The observations recorded by Dr. A. H. Southwood supply the experimental foundation for the Allen treatment which it has hitherto lacked. They show that a term of relief from the customary periodical hyperglycemia of alimentary origin even as brief as thirty-six hours renders the pancreas comparatively inert, so that it now reacts sluggishly to the stimulus of hyperglycemia. The fact that administration of "Insulin" restores the normal form of the blood glucose curve after carbo-hydrate ingestion indicates that the delay in the restoration of the normal blood sugar level is actually due to a deficiency of the internal secretion of

the pancreas. Absence of continuous or recurrent hyperglycæmia for thirty-six hours or longer, therefore, does actually reduce the functional activity of the pancreas.

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#### PRELIMINARY NOTE ON A STABLE ANTIGEN FOR THE HYDATID COMPLEMENT-FIXATION TEST.

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AND

MISS F. E. WILLIAMS

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THE observations of previous workers that fresh hydatid fluid is the best antigen in the complement-fixation test for hydatid and that any interference with the natural fluid, as by filtration through a filter candle or by heating, diminishes or nullifies its antigenic properties, have been confirmed in these laboratories.<sup>(1)</sup> The fluid, however, even when obtained by aseptic puncture of cysts of the liver or lungs of infected sheep, is found to be contaminated so frequently by organisms of the colipycocyanous group that it cannot be used after five to ten days. The routine testing of sera for the hydatid complement-fixation entails, therefore, the collection of infested viscera from the abattoirs before each test.

Extracts of fresh fluid and cyst wall with saline solution, alcohol or ether were found to have such low antigenic values as to be useless in the routine tests. Alcoholic extracts of the scolex contents of animal cysts were found to have considerable antigenic value, but unfortunately gave pseudo-positive reactions with syphilitic sera.<sup>(2)</sup>

By evaporating off the alcohol at room temperature and taking up the residue in distilled water or 0.9% salt solution we have obtained an antigen of strong antigenic value, which gives no fixation of complement in the presence of syphilitic sera, and which keeps its properties apparently without diminution. Two antigens, one prepared fifteen months and the other twelve months ago, give strong complement-fixation with hydatid sera and no fixation with sera from syphilitic patients.

#### Method of Preparation.

As much hydatid sand (scolices) as possible is aspirated aseptically from liver and lung hydatid cysts of infested sheep, sedimented from the fluid by slow centrifugalization and washed four times with sterile 0.9% saline solution and centrifugalized between each washing.

The washed scolices are mixed with an equal quantity of Kieselguhr, ground to a paste in a mor-

tar and added to about ten times the quantity of absolute alcohol. The mixture is incubated at 37° C. for three days, being shaken well several times a day, and is then kept in the ice chest for a week. The supernatant fluid is then poured off and used as the stock antigen, which is left in the ice chest till required.

For use one cubic centimetre of the alcoholic extract is put in a watch glass and allowed to evaporate on the bench at room temperature. The residue is rubbed up with one cubic centimetre of distilled water and titrated with complement. As it has never been found anti-complementary, we have used it diluted one-third with 0.9% salt solution. The residue after evaporation seems to be emulsified better with distilled water than with saline solution.

#### Remarks.

This antigen is quite stable in our hands and its antigenic properties are not appreciably diminished after fifteen months. Its utility will be recognized for laboratories where routine complement-fixation tests are already being done with syphilitic, gonorrhœal and tuberculous sera and where occasionally sera are required to be tested for a hydatid reaction. Of course, for the actual hydatid test it is necessary also to use one or more sera from known hydatid cases as positive controls.

#### References.

- (<sup>1</sup>) N. Hamilton Fairley: "The Complement Fixation Test for Hydatid Disease and its Clinical Value," *THE MEDICAL JOURNAL OF AUSTRALIA*, April 1, 1922, page 341.
- (<sup>2</sup>) N. Hamilton Fairley: *Quarterly Journal of Medicine*, 1922, Volume XV., No. 59, page 244.

### Reports of Cases.

#### AN UNUSAL CASE OF MASTOID DISEASE.<sup>1</sup>

By T. L. ANDERSON, O.B.E., M.D. (Melbourne),  
Honorary Surgeon, Ear, Nose and Throat  
Department, Perth Hospital.

Miss X.Y., aged twenty years, was admitted to hospital on July 31, 1923. On admission it was found that she was suffering from a profuse discharge from the right ear. She had slight pain over the right mastoid process. There was also a fluctuating swelling over the right occipital bone with brawny induration on that side of the neck and pain on moving the head quickly to the side. Her temperature was normal.

She gave a history of having had pain in the right ear twelve weeks previously for a period of about five days. This pain was followed by free discharge and relief from pain. About seven days later gradual swelling was noticed together with stiffness of the occipital region and the neck on the right side.

Operation was undertaken and the usual mastoid incision was made. A fistulous opening was found into the antrum. Free discharge of pus occurred from this opening on pressure over the occipital region. An incision over the occipital bone at the centre of the swelling revealed an opening through the bone into the sub-dural space. On opening up the mastoid antrum an opening through the bone internal to the lateral sinus was found.

<sup>1</sup> Read at a meeting of the Western Australian Branch of the British Medical Association on August 15, 1923.



The pus had travelled through the sub-dural space posteriorly towards the centre of the occiput and had then perforated the occipital bone causing a sub-cutaneous abscess in that region. This course marks the case as a very unusual one and the patient must be regarded as extremely fortunate.

The discharge from the ear ceased in five days. The occipital incision was healed in eight days and the mastoid wound in fourteen days when the hearing in the right ear was fifteen centimetres with a thirty centimetre watch.

### PSEUDO-HYPERTROPHIC PARALYSIS.

By W. J. HULL, M.B., Ch.M., B.Sc. (Sydney),  
Guilford, New South Wales.

OUR text-books describe pseudo-hypertrophic paralysis as running in families; since, however, it is rather the exception than the rule to meet it occurring even in the majority of the members of a family, the present report, describing its occurrence in all the children of one family, may be of interest.

There is no ascertainable history of its presence in either of the families of the parents. The father is a big, strong, healthy man; the mother is apparently a normal woman. The family consists of three boys and one girl, all with pseudo-hypertrophic paralysis in lesser or greater degree. There have been no miscarriages.

Case I.—R.G., aged ten years, began to walk at fourteen months. Nothing abnormal was noticed about him until he was six years of age, when, his parents state, he became clumsy about the legs. He became progressively worse and later tumbled over often and dragged his toes more and more on the ground.

When first seen early this year, there was definite foot-drop in both feet; he walked with an unsteady waddling gait, with a semi-rotary movement of the body, dragging the toes on the ground with each step, while the head was held projected forward. He was clumsy with the hands and had difficulty in buttoning his clothes. His calves and thighs were large and abnormally firm. His *infra-spinati* were slightly enlarged and he had slight lordosis. No knee jerks could be elicited, but his cutaneous reflexes were normal.

This boy who had been under some quack herbalist for a considerable time previous to this year, has since made much progress by wearing suitable splints at night time and strapped boots to overcome the foot-drop in the day. After six months he now walks like a normal boy, except for a slight roll of the body, runs quite fast, never falls and has lost all his foot-drop. His intellect is normal.

Case II.—G.G., aged thirteen years, walked early. He has large, firm calves and thighs; has no knee jerks in the left leg, but occasionally it is possible to elicit a faint response in the right; his sensations are normal. There appears to be no weakness in the legs and no lordosis, but the *infra-spinati* are markedly enlarged (see figure). His intellect is normal.

Case III.—A.G., aged nineteen years, has been confined to her bed for six years. The affection is more advanced in her than in any of her brothers. She walked at nine months of age and her parents detected nothing wrong till she was seven, when she became clumsy in her move-

ments and fell down when she attempted to turn round quickly. She became progressively more clumsy and uncertain in her movements and at the age of thirteen had to give up all attempts at walking even with the aid of sticks. Since then she has passed her time either in an invalid's chair or in bed. All her muscles are quite firm in spite of their disuse for the past six years. The circumference of the calf of the leg is twenty-eight centimetres (eleven inches) and that of the arm twenty-five centimetres. There are no knee jerks. When examined there was incomplete anaesthesia to all kinds of stimuli over the whole of the body except round the mouth and neck. This is unusual in pseudo-hypertrophic paralysis.<sup>1</sup> Her hands and feet were quite cold. She had *pes equinus* in both feet and Simian type of hands. There was weakness in all her muscles and she had little control over movements of the fingers. She was unable to sit up owing to weakness of the back muscles. Her speech was slurring and her intellect below normal.

Case IV.—J.G., aged twenty-one years, is the eldest of the family and the least affected. He is a big, thick-set type, with big calves, thighs, and *infra-spinati*. His knee jerks are very sluggish. He walked late (about eighteen months), was very dull at school, wrote words upside down and placed letters in the wrong position.



FIGURE.  
Showing Enlargement of *infra-spinati*.

### Reviews.

#### GENERALIZED PAIN.

THE translation into English of Professor N. Ortner's book on generalized pain has been ably carried out by Francis J. Rebman.<sup>1</sup> The book is divided into chapters in which pain in different regions of the body is discussed; for instance, cardiac pain is dealt with at length. Under this heading all the causes of pain in the heart region are discussed and the symptoms and signs which accompany these pains, are mentioned. In each instance mention is made of the special characteristics which accompany neuralgia, pleurodynia, pectoral myalgia, indigestion and so on. The differential diagnosis is well worked out in each condition and the author supplies some valuable hints from his own experience. Pain in the chest, neck, back, shoulder, sacrum and other parts are all dealt with in full. The author does not deal with the mechanism of pain at all, nor does he discuss the cause of the pain in such conditions as *angina pectoris*, except in so far as he considers the possibility of arterial, cardiac, gastric or other conditions giving rise to the same kind of pain. He appears to consider every possible cause of pain in the different regions and in some cases would seem to include almost too many possibilities. It may be said that it is unlikely that any cause of pain has been omitted. This should be an excellent book of reference and should be very useful as a guide in the differential diagnosis of abstruse pains.

<sup>1</sup> This girl has since attended the Hickson Mission at Bathurst and has been experiencing feeling of "pins and needles" in her limbs and body. I examined her again after her return and found her cutaneous sensations all more or less normal; otherwise there was no change.

<sup>2</sup> "Clinical Symptomatology of Internal Diseases: Part II, Generalized Pain," by Professor Dr. Norbert Ortner, Vienna; Authorized Translation by Francis J. Rebman; 1922. New York: Medical Art Agency; Sydney: Angus & Robertson, Limited; Post 8vo., pp. xii. + 596. Price: 25s. net.



## The Medical Journal of Australia

SATURDAY, NOVEMBER 3, 1923.

### The Human Factor in Industry.

IT has been pointed out on more than one occasion that in any inquiry in the past into industrial efficiency much stress has been laid on improved methods of working, on the installation of up-to-date machinery, on the possession of commodious and suitable premises and so forth, but that little serious attention has until recently been paid to the health of the individual worker. That the subject is being considered with more care and with some recognition of its importance is evidenced by the fact that a conference was held in Sydney on October 16, 1923, under the auspices of the Rotary Club to consider the human factor in industry.

In a recent discussion we endeavoured to show that the attitude of medical practitioners to this subject should be that of workers in preventive medicine. The adoption of a purely humanitarian point of view by medical observers would most likely lead them into side tracks of doubtful scientific value and leave them open to the accusation of personal bias or political colouring. If chapter and verse and a proper scientific reason can be quoted in regard to a proposed forward movement or change of tactics, such charges will not be levelled.

Mr. W. J. Cleary in an address before the Rotary Club conference made a good point when he directed the attention of his audience to the necessity of distinguishing between opinion and fact. Opinions are frequently based on prejudice and thus are useless. Facts may be obtained by means of research into industrial conditions, experiment and by the keeping of statistical records of observations made by a capable individual. In regard to the first two methods Mr. Cleary referred to the fact that a railway organization in Pennsylvania had recently allocated a sum of money equivalent to £100,000 sterling for the establishment of industrial research and had arranged a sum of money to be spent annually in its continuance. In Australia many of the organizations large enough to deal adequately with such research are State-owned and it will probably be

some time before the political conscience is alive to the necessity of such an undertaking. It is at present more possible to adopt the method of obtaining facts by the keeping of statistical records. Actually it is the inauguration of this means that is the chief concern at the present time of the Industrial Hygiene Branch of the Commonwealth Health Department. It is obvious that little constructive work in the direction of controlling industrial conditions from the health point of view can be undertaken until the effects on the human machine of various occupations and the risks attached to them have been determined. Mr. Cleary maintained that three things had to be considered in any effort to cope with the statistical measurement of the human factor. These were the man, the nature of the work he was doing and all that was happening while he was in the industrial environment. He doubted whether inquiries into the social and domestic conditions of individuals could be carried out without causing resentment. It must be admitted that social and domestic conditions have some bearing on health, though they probably play a minor part. It is quite clear that according as the records obtained in regard to a man's make-up are complete, so will it be possible to assign to him that particular place in the industrial establishment which is most suitable to him. Information in regard to many trades is very incomplete. Readers will remember that much of interest was read at the Pan-Pacific Science Congress in regard to mine sanitation. Merely the fringe of this vast subject was explored on that occasion. When it is recollected that less is known in regard to the conditions obtaining in many other industries, it will be evident that much more remains to be done.

In the attainment of the ideal conditions in industry, conditions in which it will be possible for a man to "carry on" with as little detriment to his health as medical science will allow, cooperation is necessary. Professor Gregory recently said that the most important thing about cooperation was the will to cooperate. When this state of mind has coupled to it the ideal of service, more will be possible. Medical practitioners by preaching preventive medicine can do yeoman service for the cause. Reiteration with conviction must win adherents.

In the forthcoming Congress at Melbourne the dominant note will be prevention. This is helpful. In the Section of Preventive Medicine and Tropical Hygiene concentrated teaching will be given. It is to be hoped that this will be one of the largest sections at the Congress.

### Current Comment.

#### CARBON MONOXIDE POISONING.

THE recent mining disaster in the Maitland district in New South Wales has brought the subject of carbon monoxide poisoning before the minds of most thinking people. The risk of carbon monoxide poisoning in coal mines has long been recognized. In addition reference has been made on several occasions in this journal to the very real danger which may arise from gas fires, gas stoves and bath heaters coupled with improper ventilation. The risk, however, does not stop there and investigations have been carried out in other directions. Dr. Yandell Henderson and Dr. Howard Haggard have shown that gas from the exhaust pipes of motor vehicles contains much carbon dioxide.<sup>1</sup> They have studied the air from the streets of New York by means of samples collected in certain districts. The results obtained by them often gave a value of over one part in ten thousand parts of air. Absence of wind and the presence of moisture were found to favour a high percentage of the gas. They also estimated the carbon monoxide content of the air of motor garages. They found that the air in small garages became contaminated to a very serious extent. When an engine is allowed to run idle to warm it on a cold day the atmosphere may be contaminated in five minutes so that it contains twenty-five parts of carbon monoxide in each 10,000 parts of air. In ten minutes the contamination may reach a rapidly fatal level. They refer to the numbers of fatal "accidents" that have occurred in consequence of this contamination. They also made experiments with vertical in place of horizontal exhaust pipes. Both with and without ventilation pipes in the roof of the garage the concentration of the gas at the level of the observer was much lessened.

It is interesting to note that J. S. Haldane in 1906 came to the conclusion that one part in ten thousand was the maximum which should be allowed in the underground railway system in London. In making recommendations to the New York and New Jersey Tunnel Commissions Dr. Henderson advised that exposure of persons in the Hudson River vehicular tunnel to four parts of carbon monoxide in ten thousand parts of air for not longer than forty five minutes would produce no ill-effects. The presence of 0.02% to 0.05% carbon monoxide in the air is practically harmless. Haldane regards 0.05% as the lowest limit of concentration of carbon monoxide capable of producing symptoms. The affinity of hæmoglobin for carbon monoxide is three hundred times its affinity for oxygen. It is found

that 1.65% of carbon monoxide in an atmosphere containing 20.61% oxygen leads to 100% saturation of hæmoglobin. Carbon monoxide in a percentage of 0.25 with 20.91% oxygen leads to 60% saturation of hæmoglobin. Carbon monoxide 0.11% with 20.95% oxygen leads to 50.6% saturation of hæmoglobin and 0.04% carbon monoxide with 20.95% oxygen leads to 38.9% saturation of hæmoglobin. The highest percentage of carbon monoxide encountered in the hæmoglobin by Haldane was 79% to 80% in the cadaver of a miner.

In regard to the symptoms produced by varying concentrations of carbon monoxide some valuable work was reported in 1922 by Sayers, Meriwether and Yant. On exposure of persons to two parts of carbon monoxide in ten thousand parts of air for six hours slight headache alone was produced. In an atmosphere containing three parts of the gas in ten thousand parts of air similar slight symptoms were produced after a period of four hours. When the air contained four parts in ten thousand persistent headache and yawning were produced after one hour, after one and a half hours dizziness occurred and walking caused a more noticeable headache. At the end of two hours dizziness was present and palpitation and panting were caused on climbing stairs. For each concentration of the gas there is a definite equilibrium and this equilibrium is reached more slowly in low than in high concentrations. Strenuous exercise causes more rapid combination of carbon monoxide with hæmoglobin. The symptoms are emphasized by exercises.

Drs. Henderson and Haggard were members of a commission appointed in 1921 to consider the question of resuscitation from carbon monoxide asphyxia. The other members of the Commission were Drs. C. K. Drinkwater, W. B. Cannon, D. L. Edsall, L. J. Henderson, F. W. Peabody, R. R. Sayers who made reference to the subject at the recent Pan-Pacific Science Congress, and Dr. C. B. Scott. The report of this Commission has recently been published.<sup>1</sup> The work of the Commission was divided into two parts. They first of all considered the general status of the problem of gas poisoning as it existed in the United States of America and the methods that were used in resuscitation. In the second part of their work they endeavoured to provide a new and more efficient method. They point out that in carbon monoxide poisoning there may be a long period of unconsciousness during which respiration, though shallow, is nevertheless present. Artificial respiration is often practised on persons in this condition whether they need it or not. If rescue crews are possessed of the mechanical apparatus, they will use it and many a sufferer is forced to experience a period of artificial respiration by means of the "pulmotor" or the lung motor.

The Commission could find no evidence that the use of such positive pressure apparatus produced results superior to those obtained by the use of the prone method of Schafer alone. There is, moreover, a distinct danger of causing actual harm by these positive pressure apparatus. It was found

<sup>1</sup> The Journal of the American Medical Association, August 4, 1923.

<sup>1</sup> The Journal of Industrial Hygiene, August, 1923.

that with the use of the "pulmotor" and the lung motor an increased amount of tracheal material reached the lungs of dogs. In a series of eight hundred and sixty persons admitted to hospital for gas poisoning 27.8% had an abnormal amount of moisture in the respiratory tract and 5.9% developed obvious pneumonia. The opinion is expressed that numerous instances of patches of bronchopneumonia were undiagnosed in this series. That the use of positive pressure apparatus for artificial respiration may increase the incidence of pneumonia is the conclusion formed. At the same time it was found that no harm resulted to cats treated by these apparatus as far as embarrassment of the pulmonary circulation was concerned. Rupture of the lungs was not produced on any occasion.

In regard to the second part of the work of the Commission extensive reference is made to the work of Henderson and Haggard on the treatment of carbon monoxide poisoning with oxygen and carbon dioxide. It must be remembered that carbon monoxide combines with hemoglobin much more readily than oxygen does. Consequently if dissociation is to occur, oxygen must be present in increased quantities. Carbon dioxide is a stimulant to respiration of the most effective kind. The quantities of these respective gases recommended by Henderson and Haggard as a result of their experimental work is 5% carbon dioxide in oxygen. This matter was discussed recently at the Pan-Pacific Congress. Dr. R. R. Sayers, a member of the American Commission, said at the Congress that he had not found much difference between oxygen given alone and in combination with carbon dioxide. He also uttered a warning in regard to the danger of giving too much carbon dioxide.

The practical application of this work is an industrial problem and the advice of the Commission is sound, namely that the Schafer method of resuscitation should be much more widely taught. The use of inhalations of oxygen with or without carbon dioxide must and will remain part of the duty of the medical practitioner.

#### BILE PIGMENT AND EARLY OBSTRUCTIVE JAUNDICE.

Two distinct views are held concerning the mechanism of the absorption of bile pigment from the liver in early obstructive jaundice. According to one view the bile pigment is absorbed by the lymphatics and according to the other the medium of absorption is the blood stream. Both views have had their advocates and Dr. William Bloom has recently discussed the subject and published some interesting experimental data in an endeavour to settle the question.<sup>1</sup> He begins by referring to the work of Eppinger who held that in the livers of patients suffering from obstructive jaundice the normally thin canaliculi become greatly distended and tortuous and manifest evidence of rupture into peri-capillary spaces. Jagić and Ogata both failed to find rupture of canaliculi in dogs after ligation of the common duct although definite jaundice was present. The theory of absorption by the lymphatics

was supported by Fleischl, Kunkle and Kufferath. These observers independently found that bilirubin was present in the lymph stream after ligation of the common duct before it was found in the urine. Observers whose conclusions were that the lymphatics played a secondary part, included Wertheimer and Lepage, Mendel and Underhill and Whipple and Hill. Dr. Bloom in discussing these anomalous results holds that they can be explained by differences in the experiments. In the first place the blood was not examined for bilirubin and he states that in certain diseases patients with definite icterus and a bilirubin serum content above the normal exhibit a urobilinuria and not a bilirubinuria. In the second place the tests used, the Gmelin and Salkowsky tests, are not as delicate as later tests and thirdly he thinks that the injection of various dyes and other substances into the *ductus choledochus* cannot be interpreted as reproducing very closely the process of mechanical jaundice.

Dr. Bloom carried out a very interesting series of experiments. He used dogs from which both kidneys had been removed, to prevent excretion of the bile into the urine. The common bile duct was ligated and divided. The gall bladder was either excised or it was put out of action by ligation of the cystic duct. The blood and lymph of the animal were then examined at fifteen minute intervals by means of the Van den Bergh test for the presence of bilirubin. The animals were killed as soon as a reaction was obtained with the test in order to allow portions of the liver to be fixed for microscopical study. Dr. Bloom points out that the dog's serum normally is free from bilirubin. He determined that the fact of removal of the dog's kidneys did not cause a bilirubinuria. He found that bilirubin could be detected in the blood of fourteen dogs about two hours after ligation of the common duct by means of an indirect reaction to the Van den Bergh test. As a result of six experiments he found that bilirubin appeared much earlier in the lymph than in the blood stream. Here also only the indirect reaction was obtained.

Dr. Bloom also examined microscopically the livers of the dogs which had been used for the experiments. In no instance was he able to find rupture of the bile capillaries as described by Eppinger. He discusses the fact that only the indirect response to the Van den Bergh test was obtained. Readers will remember that this test was discussed by Miss Cowen and Dr. S. W. Patterson last year (see THE MEDICAL JOURNAL OF AUSTRALIA, November 18, 1923). The direct reaction was held by Van den Bergh to be a sign of the presence of obstructive jaundice. The indirect reaction is supposed to be given with jaundice arising from all causes. Dr. Bloom found as a result of separate experiments that the direct reaction appeared after the ligation of the common duct at a later date than the indirect.

Although the weight of evidence has hitherto been in favour of the lymphatic absorption of bile pigments in the liver, Dr. Bloom's results are of importance. His promised report on the question of the direct and indirect reactions to the Van den Bergh test will be awaited with interest.

<sup>1</sup> Bulletin of the Johns Hopkins Hospital, September, 1923.



## Abstracts from Current Medical Literature.

### PHYSIOLOGY.

#### The Production of Adrenalin.

ADRENALIN is the only specific substance definitely known to be produced by the adrenal gland. It is found concentrated in the medulla and it has been assumed that it is produced in the medulla. F. A. Hartman and W. E. Hartman (*The American Journal of Physiology*, August, 1923) have investigated the possibility that it is produced in the adrenal cortex as well as in the medulla and that it is stored in the latter. By colorimetric tests for adrenalin they have demonstrated that it is present in the cortex to the extent of 0.5 milligramme per gramme or less. Inhibition of contraction of the intestine has been obtained from extracts of the cortex prepared either by shaving it away from the medulla while frozen or by complete cauterization of the medulla some time previously. Dilatation of the sensitized pupil has been obtained from exercise after one suprarenal body has been removed and the medulla of the other destroyed by cauterization. Support for the idea that adrenalin is produced in the cortex is obtained in certain conditions which cause an increased demand for adrenalin. Muscular exercise has been shown to be accompanied by an increase in the output of adrenalin. Excessive exercise leads to vacuolization of the cortex and reduction of the lipoids. On the other hand a gradually increasing demand on this function as undoubtedly occurs with greater muscular development seems to lead to a relative increase in the cortex. Excitement in cats causes an increased production of adrenalin as shown by the denervated pupil. The excitement produced by shutting off the air from the lungs for forty seconds was used in the experiments. When such excitement was produced in cats from which one suprarenal body had been removed and the medulla of the other destroyed by cauterization, there was a prompt dilatation of the denervated pupil. After removal of the cauterized suprarenal body the same test produced no response in the denervated pupil. The authors conclude that adrenalin is produced by the cortex.

#### The Diastolic Phases of the Cardiac Cycle.

ALTHOUGH it is well known that ventricular filling by no means takes place throughout diastole, it is not commonly emphasized that blood does not flow into the ventricle until the process of muscular relaxation has practically been completed. In other words the rate and duration of muscular relaxation are in no wise related to the rate and duration of ventricular filling. J. Burnstein (*The American*

*Journal of Physiology*, June, 1923) has studied the relations of the different phases of diastole in man using for this purpose synchronous optical tracings of the arterial and supra-clavicular venous pulses. It has been found necessary to subdivide the period of diastole into a number of distinct and consecutive phases. At the onset of muscular relaxation the semi-lunar valves are in the act of closing, thus forming the first diastolic event, the proto-diastolic phase. During the remainder of muscular relaxation both sets of valves remain closed and the ventricle relaxes isometrically, isometric relaxation phase. Under normal conditions of venous pressure the auriculo-ventricular valves do not open and the blood does not begin to enter the ventricle until this relaxation has been completed. Inasmuch as the process of relaxation is quite as fundamental an attribute of muscle tissue as that of contraction, it is possible that the duration of the isometric relaxation phase may supply valuable information as to the condition of the heart muscle. The bulk of experimental evidence indicates that after the opening of the auriculo-ventricular valves, inflow at first occurs rapidly, rapid inflow phase, and as the intra-auricular and intra-ventricular pressures become equalized it proceeds more slowly, diastasis. It is obvious, therefore, that the length of the rapid inflow and diastatic phases are criteria of filling mechanisms of the heart. For the purposes of measurement of these phases pulse records from fifty individuals were examined. Although there was considerable variation in different individuals the time of the proto-diastolic phase of 83% lay between 0.03 and 0.05 second, so that 0.04 second roughly represents the average duration of this phase in man. In the isometric relaxation phase 70% fell between 0.06 and 0.09 second. Great variations occur in the times of the phase of rapid inflow and still greater variations in diastasis. The phase of diastasis lengthens proportionately to the duration of entire diastole.

#### The Sensation of Thirst.

G. T. PACK (*The American Journal of Physiology*, July, 1923) discusses the sensation of thirst. He states that the theory that thirst is of the nature of a general sensation, with a secondary local reference to the pharynx, has received widespread and almost universal credence. According to this view the loss of water content of the tissues increases the salt concentration of the body fluids and this condition is responsible for the origin of afferent impulses from the various viscera or for the direct stimulation by the hypertonic blood of the unknown centre in which the sensation of thirst is represented. According to Cannon thirst is due to a relative drying of the mucosa of the mouth and pharynx due to either a diminution or absence of the salivary secretion, a condition brought about by any dehydrating

factor or by such local factors as mouth breathing, prolonged speaking *et cetera*. The thirst produced by physiological doses of atropine, by such emotional states as anxiety and fright, he explains as due to a diminution or absence of the salivary secretion. The author has investigated the subject from the point of view that if an increase in the flow of saliva will appease the desire to drink, then it might be inferred that pilocarpine would be an efficient agent in relieving thirst. Rabbits were subjected to seven day periods of fasting, food and water both being withheld. At the end of this period pilocarpine hydrochloride was administered subcutaneously. When salivation became profuse, measured amounts of water were placed in their cages and left for an hour. Control animals were given a hypodermic injection of equivalent amounts of water so as to eliminate the psychic factor. The rabbit controls drank sixty-two to one hundred and thirty-seven cubic centimetres within the first half-hour. The rabbits salivating from pilocarpine either refused to drink or, as in two cases, drank fifteen to twenty-five cubic centimetres of water within the hour. The difference can be interpreted as due to quenching of their thirst by drinking their own body fluids. Pilocarpine brings about an exceptionally high blood concentration, especially when its administration is superimposed upon prolonged water deprivation so that thirst cannot be of the nature of a general sensation.

#### The Static Effect in Muscular Activity.

THE type of activity to which the term static work is applied, enters in some degree or other into all forms of muscular effort and on account of the peculiarly severe strain it imposes on the organism it merits more attention than it has hitherto been accorded. E. P. CATHCART, E. M. BEDALE AND G. MCCALLUM (*Journal of Physiology*, March, 1923) have studied the effects of continuous, intermittent and gradually increased static work in man. The static type of effect may be regarded as the isometric contraction in operation when either the load is of such magnitude that it is beyond the power of the individual to perform external work, *exempli gratia* the unsuccessful attempt to move a very heavy weight or else the weight, being within the individual's compass, is kept suspended by voluntary muscular effort. In the types of static effect studied there was no reduced intake of oxygen during the effort and no definite increase in the oxygen intake after the cessation of effort. There was little alteration of the respiratory quotient as the result of the effort. There was a moderately uniform increase of blood pressure during the effort, but the pressure returned to normal resting value within five minutes of the cessation of work. The increase in the diastolic pressure was more definite than that in the systolic pressure. The pulse-



rate showed similar changes to the blood pressure. In the gradual change from positive to static effect there comes a rate when the cost per kilogram rises and continues to rise as the effect becomes more static. The rise is associated with a definite decline in the mechanical efficiency with which the effort is made. The degree and duration of fatigue induced by the static effect is out of all proportion to the amount of work done and to the duration of the experiment.

## BIOLOGICAL CHEMISTRY.

### Synthesis of Urea.

H. D. KAY has studied the formation of urea from solutions of carbonate and carbamate of ammonia under the influence of urease from the soy bean (*Biochemical Journal*, March, 1923). Previous investigators have studied this problem with varying results. While some have asserted that urea is formed from the reversible action of urease, others have endeavoured to show that the action follows such a path that reversible formation of urea could not take place. The problem according to the author is really that of separating a small amount of urea from a large excess of ammonium carbonate. The author is of opinion that he has isolated urea under conditions in which active urease and a strong solution of a mixture of ammonium carbonate and carbamate are present. Control experiments show that urea does not come from solutions of carbonate and carbamate of ammonium alone or from the enzyme alone or from the enzyme in the presence of another ammonium salt or from the inactivated enzyme in the presence of the carbonate and carbamate of ammonium. The author concludes that the action of urease is reversible and must depend on reactions which are reversible.

### Deficiency of Iron.

J. P. MCGOWAN AND A. CRICHTON describe certain nutritional disorders in pigs which they attribute to a deficiency of iron in the diet (*Biochemical Journal*, February, 1923). In a breeding establishment it was the custom to keep the sows in the open on pasture till within fourteen days of the farrowing date. They were then housed in pens with cement floors and fed on fish meal, bruised maize and "draff" or brewer's offal. The young were born and did well for a month. The following train of symptoms then made its appearance. The young pigs became dull and listless; they were hairy in appearance; the breathing was pumping in character. Sudden death often occurred. After autopsy the animals were found to be fat, but with intense dilatation of the heart with effusion into the pericardium and pleural cavities. The tissues were sterile upon culture. The hæmoglobin value of the blood was 15% and there were 3,000,000 red cells per cubic millimetre. In those pigs surviving early

death the animal was emaciated and under size. At autopsy numerous adhesions were found in the chest. The authors administered ferric oxide freely with the food to both sows and young pigs. Sudden deaths ceased at once. The pigs became lively and clamoured for food. The hæmoglobin value rose to over 70% in over one hundred pigs tested. At fourteen weeks the treated pigs were three times the weight of untreated pigs. The authors discuss the relation of this disease in pigs to "wet" beri-beri in human beings.

### Flavour of Chilled Meat.

W. M. CLIFFORD (*Biochemical Journal*, February, 1922) has estimated the amount of carnosine in fresh and chilled meat. The flavour of meat has long been assumed to be due to the presence of extractives, though most of these are tasteless when obtained in a pure state. The author has estimated the amount of carnosine or  $\beta$ -alanine-histidine in meat by a colorimetric process. During researches on chilled meat many estimations were made on the amount of carnosine in beef, mutton, lamb and veal kept in cold storage. Later it was noted that fresh meat yielded much higher figures for this extractive. A study of the rate of disappearance in meat stored under refrigeration showed progressive disappearance of carnosine. The author states that a measurement of the depth of colour produced on diazotizing carnosine in a watery extract of muscle gives an easy and rapid test for distinguishing English fresh-killed meat and cold-storage meats. Some indication can also be obtained of the period during which the meat has been stored.

### Breeding Rats.

G. A. HARTWELL, E. C. MOTTRAM AND V. H. MOTTRAM (*Biochemical Journal*, February, 1923) discuss at some length the best means of obtaining a good rat stock for experimental purposes. They have found that an important factor is the maintenance of an equable temperature from 15° C. to 20° C.. Rats are very liable to pneumonia if the temperature is allowed to change much. The diet should contain bread, milk and kitchen scraps and should show a high percentage of proteins and fats. The authors believe in an in-bred stock from does of six months old. The stock should be handled from birth and subjected to constant inspection. Isolation should be practised upon all sick rats until the stock is well established. The mothers require feeding with bread and milk during lactation.

### Diet and the Border Line of Acetonuria.

ROGER S. HUBBARD AND FLOYD R. WRIGHT (*The Journal of Biological Chemistry*, August, 1923) discuss the question of the diet and the border line of acetonuria. They refer to a previous paper in which they studied the acetone excretion of patients who were receiving diets low in carbohydrates and rich in fat.

They now report the results of experiments on four patients suffering from arthritis and fed on similar diets. The diets were kept constant throughout the period of experimentation. The basal metabolism of each patient was determined and the probable metabolism roughly estimated from the value so obtained and the activity. Owing to the physical disability the metabolism was lower than it would have been for normal subjects of the same height and weight. Food was furnished to supply the calories so estimated. The ratios between the ketogenic and anti-ketogenic material in the different diets were calculated from a slightly modified form of Woodyatt's formula. A slight acetonuria developed in all instances, but the amounts found in the urine when the diets contained one molecule of ketogenic material for each molecule of antiketogenic material were very small. The variations in amount excreted did not correspond with the variations in the amount of fat in the diet or with the estimated activities of the patients. They conclude that the border line of ketosis is found in normal subjects when the diet contains one molecule of anti-ketogenic for each molecule of ketogenic material.

### Hæmoglobin Estimation.

EDWIN E. OSGOOD AND HOWARD D. HASKINS (*The Journal of Biological Chemistry*, August, 1923) find that, while the acid hæmatin method of estimating hæmoglobin yields very accurate results, the stock solutions of strong acid hæmatin used as a standard are not only difficult to prepare, but also require renewal about every four months. They have, therefore, devised a new standard solution of thirty-two grammes of ferric sulphate and eighty milligrammes of chromic sulphate to one hundred cubic centimetres. The ferric salt has to be prepared freshly from recrystallized ferrous sulphate. They advocate the following technique for carrying out the estimation. Blood is obtained in the usual manner and 0.05 cubic centimetre is measured in an accurate 0.1 cubic centimetre pipette. The blood is delivered into 2.45 cubic centimetres of water in a test-tube. As soon as the blood is laked 2.5 cubic centimetres of one-fifth normal hydrochloric acid solution are added. This yields five cubic centimetres of a 1% solution of blood. The test-tube is then warmed to 55° to 60° C. in a water bath for seven minutes. The maximum colour has then developed. The standard solution is placed in the left hand cup of the colorimeter and set at fifteen millimetres. The blood solution is cooled and placed in the other cup. Several readings are taken and the average determined. The temperature has to be controlled. A table is supplied giving the hæmoglobin readings at given temperatures for each colorimetric reading. They claim that the estimation is rapid, simple and accurate and that the standard solution is permanent.

## British Medical Association News.

### SCIENTIFIC.

A MEETING OF THE SOUTH AUSTRALIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held in the Lister Hall, Hindmarsh Square, Adelaide, on August 30, 1923, DR. JAMES RIDDELL, the PRESIDENT, in the chair.

#### Erythema Multiforme.

DR. ROWLAND HARROLD showed a woman who had an acute rash on her forearms, hands and neck. She complained of small blisters which had formed and were spreading rapidly and gave a sensation of burning. She had first noticed the rash fourteen days previously. She had had a similar affection four years previously. This had disappeared. Dr. Harrold said that the condition was rare in South Australia, but more common in colder climates. One week before she had noticed the rash she had had a sore throat and this was most probably the cause of the disease. *Erythema multiforme* was supposed to be due to some auto-infection. In this instance the throat was the cause of the infection as it had been in the previous attack. Treatment was the application of calamine lotion with tar.

#### Aneurysm of the Subclavian Artery.

DR. JOHN CORBIN showed a man whose left subclavian artery he had ligated in the first part. This report will appear in next week's issue.

#### Removal of Small Pin from the Abdomen.

DR. JOHN CORBIN next showed a small pin covered with phosphatic deposits which he had removed from the abdominal cavity of a patient. He said that Mrs. B., *etatis* thirty-three years, had been admitted to the Adelaide Hospital complaining of severe pain in the right lower quadrant of the abdomen. She had had similar attacks but of less severity during the previous seven months. The previous attacks had lasted from one to six hours. The onset of the attacks had been sudden and had sometimes been accompanied by vomiting and diarrhoea. On admission to hospital the pulse-rate had been ninety in the minute and the temperature had been 37.8° C. (100° F.). There had been slight rigidity and tenderness in the right side of the abdomen. A small rounded mass had been palpable between the anterior superior spine of the ilium and the umbilicus, rather nearer the middle line than the superior spine. Nothing abnormal had been felt *per vaginam*. Her condition had been diagnosed as appendiceal abscess. An incision had been made and a mass had been exposed. Thickened peritoneum had been carefully incised. About four cubic centimetres of pus had escaped obviously infected with *Bacillus coli communis*. Dr. Corbin said that he had decided not to search for the appendix, but had inserted a finger to make sure that the cavity was thoroughly emptied. His finger had been pricked by a sharp point. A pair of forceps had been inserted and the pin shown had been extracted. The cavity had been drained for thirty-six hours and the wound had healed with rapidity. The patient had made an uninterrupted recovery and had left the hospital fourteen days later. When she was questioned later with regard to having swallowed a pin, she had not been able to remember having done so.

#### Uterine Myoma.

DR. T. G. WILSON showed a fibroid about the size of a large orange which he had removed from a woman aged twenty-eight years. He had enucleated the fibroid as the woman had asked him not to remove the uterus if it could be avoided. After the fibroid had been removed, the whole of the cavity of the uterus had been open on the left side and it had been necessary to reconstruct the uterus. Dr. Wilson said that he did not think that there

would be any more risk of the uterus rupturing at a subsequent pregnancy than if the woman had had a Caesarean section. There had been evidence in the fibroid of red degeneration. The presence of the tumour had only been noticed after a miscarriage six weeks previously and it had been growing very rapidly in size. The patient had had no other symptoms.

#### Anthrax.

PROFESSOR J. B. CLELAND showed the specimens from a patient suffering from anthrax and read the notes and a history of the disease in Australia (see page 455).

#### X-Ray Photographs of Gall-stones.

DR. H. CAREW NOTT showed two radiograms of gall-stones, one taken from in front and the other from behind. The stones were very clearly visible just above the outline of the kidney which was easily seen. One stone was detached from the main mass and its situation in the common duct had been recognized.

#### Fibroid Uteri.

DR. C. DUGUID showed two specimens of fibroid tumours of the uterus of different type. The complaint of the patient in each instance had been inability to pass urine.

The first specimen was a large irregularly nodulated uterus which had been fixed in the pouch of Douglas. The symptoms had been coming on for four years and when seen the patient, aged thirty-four years, had had albumin in her urine and had given evidence of a chronic toxæmia. The posterior vaginal wall had been visible between the labia; there had been rectal tenesmus with passage of mucus and for the previous week there had been difficulty in passing urine. A catheter specimen on the fifth day after the operation had contained no albumin.

The second specimen was from a woman aged forty-eight years and before section had been globular in shape, flabby in consistence and of the size of a three and a half months' pregnancy. There had been menorrhagia for two years and five months previously. The presence of a fibroid of the uterus had been diagnosed and an operation had been advised. In the interval the uterus had increased considerably, but there had been no amenorrhoea. Suppression of urine in this patient had supervened without warning. The bladder had been very distended and about one and a half litres of urine had been removed. The uterus had been lying tilted with its right lateral area near the middle line of the body. A boggy swelling had extended down to the cervix and had pressed on the urethra.

Professor J. B. Cleland had reported this to be an oedematous and highly cellular fibroma. A smaller and typically hard fibroid tumour had occupied the left lateral region of the uterus.

The patient had attributed the onset of the suppression to participation in children's games. Difficulty in passing urine the night before had been noticed.

DR. W. RAY then read a paper entitled "A Case of Diabetic Coma Treated with 'Insulin'."

Dr. Ray also reported a case of diabetes which he was treating at the moment with "Insulin" with good results. He handed round an early edition of Willis's "Medicine" and read from it the account of diabetes.

DR. H. SWIFT in opening the discussion on "Insulin" which had been postponed from the previous meeting, thanked Professor Brailsford Robertson and Dr. de Crespigny and congratulated them on the success of their work. Dr. Swift said that although he had had no actual experience of "Insulin," he had through the courtesy of Dr. de Crespigny seen patients under treatment at the Children's Hospital. He thought that the discovery of "Insulin" was one of the greatest and one of the most useful of recent years. He thought that the use of "Insulin" ought to be very strictly governed so that pharmacists should not be allowed to sell it. Patients ought

also to be always "Insulin" thought over with "Insulin" cess. He tablet from the

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also to be impressed with the statement: "Once 'Insulin' always 'Insulin.'" With regard to the method of giving "Insulin" either intravenously or subcutaneously, he thought that in time the patient would be covered all over with pin-pricks. He asked Dr. de Crespigny whether "Insulin" had been given by mouth with the same success. He suggested that it might be given by placing a tablet under the tongue and allowing it to be absorbed from there.

Dr. Swift in discussing the case of very severe septic condition quoted by Dr. de Crespigny, mentioned a patient under his care suffering from diabetes who had developed a very bad mammary abscess with enormous sloughs. The patient had done very well under Allen's treatment and the breast had got quite well and strange to say the woman's urine had become sugar-free. He asked Dr. de Crespigny whether he thought that it was really the "Insulin" that had done so much good in this patient or whether it was analogous to the one quoted by him.

Dr. Swift asked whether there was any new method of estimating the blood sugar, as he felt sure that patients would not like the continuous extraction of a few cubic centimetres of blood. Another point was that there were not many people who could afford to have all the tests done so often. He asked whether it was absolutely necessary to have the blood sugar test carried out at frequent intervals.

DR. NEWLAND, C.B.E., D.S.O., asked whether "Insulin" had been injected into the spleen direct so that it might go along the splenic vein to the liver. He also asked if a pancreas had been grafted into the spleen of a depancreatized dog.

DR. JAMES RIDDELL, on behalf of the members thanked the speakers.

DR. C. T. CH. DE CRESPIGNY in reply said that he had listened to Dr. Ray's case reports with great interest and was in agreement with Dr. Ray that the dose of "Insulin" had been much too small. He said that in his own recorded cases the doses had been too small. Whether the power of "Insulin" could be gauged by the reduction of the blood sugar was a doubtful point. The problem was being investigated by bio-chemists and they had reported that there was no evidence of an increase of carbohydrate oxidation when the patient was receiving "Insulin." The amount of oxygen used and the amount of carbon dioxide given out were the same under the same conditions (except for the administration of "Insulin"). He agreed with Dr. Swift that the use of "Insulin" should be restricted to the proper people. He said that blood tests need not be done, once the diet had been established. He referred to histories of two patients to whom the injections had been given by their wives. With regard to the patient with cellulitis of the leg who had done so well with "Insulin," he thought that the recovery was due to the "Insulin" and he said that the patient was still diabetic. In answer to Dr. Newland he said that he himself would not like to inject "Insulin" direct into the spleen and he did not think it had been done. He had no knowledge of a pancreatic graft having been put into the spleen of a dog whose pancreas had been excised. He said that in his experience it was of no advantage to inject the drug intravenously. When given hypodermically it was very rapidly absorbed from the tissues. When given by the mouth it had not done much good, as "Insulin" was so very easily and readily acted on by the digestive enzymes.

DR. RAY in reply said that he had had a patient similar to the one spoken of by Dr. Swift or rather one who had been cured by the Allen treatment. A man whose blood sugar had been 0.32%, had lost 37.8 kilograms (six stone) in weight. He had been put on the Allen treatment. Twelve months later he had taken a full diet and his urine had been sugar-free. He had gained considerably in weight and at the time of the meeting was on full duty as a policeman. This was an instance of cure by the Allen treatment and he thought that the case of sepsis quoted by Dr. Swift might be the same.

## MEDICO-POLITICAL.

### ANNUAL MEETING OF DELEGATES OF THE AFFILIATED LOCAL ASSOCIATIONS OF MEMBERS WITH THE COUNCIL OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION.

THE annual meeting of the delegates of the affiliated local associations of members with the Council of the New South Wales Branch of the British Medical Association was held at the B.M.A. Building, 30 to 34, Elizabeth Street, Sydney, on October 5, 1923, DR. C. H. E. LAWES, the PRESIDENT, in the chair.

The following delegates were present: Dr. G. M. Barron (Northern Suburbs Medical Association), Dr. K. S. McArthur Brown (Central Western Medical Association), Dr. G. A. Buchanan (Central Southern Medical Association), Dr. C. A. F. Clark (Central Northern Medical Association), Dr. L. Fetherston (South-Eastern Medical Association), Dr. A. M. Gladden (City Medical Association), Dr. W. B. Grant (Balmain District Medical Association), Dr. F. W. Kane (Western Suburbs Medical Association), Dr. R. M. Kinross (Northern District Medical Association), Dr. R. A. Robertson (Border Medical Association), Dr. F. G. N. Stephens (Eastern Suburbs Medical Association), Dr. R. B. Trindall (South Sydney Medical Association) and Dr. J. H. Wilson (Western Medical Association).

### Death of George Edward Rennie and Herbert Lethington Maitland.

On the motion of DR. R. B. TRINDALL a silent vote of deep regret at the loss sustained by the Branch through the death of George Edward Rennie and Herbert Lethington Maitland was passed.

### Friendly Society Lodge Practice.

DR. W. F. SIMMONS moved on behalf of the Illawarra Suburbs Medical Association firstly that the secretaries of lodges should be required to provide the Christian and surnames, the addresses and the changes of addresses of all lodge members when submitting the lists supplied to the medical officers and secondly that the secretaries should be required to indicate to the medical officers the names of the lodges from which "medical members" added to their list were transferred. In dealing with the first part he pointed out that the medical officers of lodges in the larger industrial areas found it embarrassing and confusing to have lists which did not indicate the identity and abodes of the members entitled to treatment. In his own district representations had been made to the lodge secretaries and many but not all had complied. It would be realized what difficulties might arise when a list contained many members named Jones or Brown, unless the Christian names and the addresses were given so that the medical officer could identify them.

DR. F. W. KANE (Western Suburbs Medical Association) seconded the motion. He thought that a regulation of this kind would be wise and very useful, especially for book-keeping purposes.

In the course of a discussion it was pointed out that in the majority of instances the secretaries of the lodges would be glad to provide the information, as it would actually tend to lessen their own troubles as secretaries.

DR. F. G. N. STEPHENS, speaking for the Eastern Suburbs Medical Association, thought that every member on joining a lodge should be given a number and that this number could be used as an identification sign as long as he remained entitled to receive medical benefit. There was general agreement that it was essential for medical officers of lodges to know who was entitled to medical attendance and that this would not be possible unless this information were available. It was recognized that it was eminently desirable that medical officers of lodges should stand in friendly relations with the secretaries in order that both might work in the interests of the lodge members. The meeting therefore resolved to refer



the matter to the Council to take such steps as might be necessary to enable medical officers of lodges to secure the information indicated.

In regard to the second part of his motion, Dr. Simmons said that secretaries of lodges often placed on the medical officers' lists the names of members who had been transferred from other lodges for medical benefit without indicating the lodge from which the member was transferred. In some instances the member belonged to an institution which was not a friendly society.

It was explained that the friendly societies used the term "medical member" for a member who, on changing his residence, remained a member of his original lodge but obtained his medical benefit through a lodge in the district to which he had moved. The Australian Natives' Association, Limited, the Phoenix Mutual Provident Society, Limited, and the People's Prudential Benefit Society, Limited, were not friendly societies and were not recognized for the purpose of medical benefit. It was therefore necessary for the medical officer to be informed when a "medical member" was placed on his list and this information should include the name of the lodge to which the member belonged. It was left to the Council to consider the matter and to take steps necessary to provide that the lodges from which "medical members" came, should be indicated in the medical officers' lists.

Dr. Simmons also called attention to the want of uniformity of the certificates signed by an applicant for medical benefit in regard to the income limit. He said that the Protestant Alliance Friendly Society of Australasia and the Grand United Order of Oddfellows had included in their printed forms of applications for membership a clause corresponding to the income limit clause of the Common Form of Agreement. Applicants signing this form necessarily became aware of the income limit clause and subscribed to it. If all orders adopted this expedient it would be unnecessary for the medical officer to require the member to sign the Contract Medical Benefit Certificate at the time of examination.

Dr. T. W. LIPSCOMB, in seconding the motion, pointed out that its adoption would result in a definite relief of the lodge secretaries. It was agreed that the Council be asked to induce the friendly societies to follow the precedent set by the two societies named.

Dr. L. FETHERSTON, on behalf of the South-Eastern Medical Association, asked that arrangements be made with a view to the use by all friendly society lodges in the State of New South Wales of uniform medical certificates. He pointed out that medical officers had to use three books of certificates, one for signing a member "on," one for signing a member "off" and one for "continuation." In many places cumbersome and unnecessary forms were required by certain lodges. Representations had been made in Dr. Fetherston's district to the lodges to adopt a uniform set of certificates, but this had not been successful. Certain orders provided books of certificates which were short and satisfactory. In the course of a short debate it was pointed out that the representatives of the Friendly Societies' Association had discussed this subject with the Council two years previously and that they had agreed that this proposal was a good one. In the end it was resolved that the adoption of uniform medical certificates by all friendly society lodges was desirable and that the Council be asked to do what it could to bring about this suggestion.

#### Consulting Rooms at Chemists' Shops.

Dr. F. W. KANE (Western Suburbs Medical Association) moved:

That the present rule be amended to read as follows:

No member of the Association shall have a consulting room in the same building as a chemist's shop or other place of business without first having obtained the sanction of the Council of the Branch.

He pointed out that on two occasions his Association had been asked to consider the position of medical practitioners who had consulting rooms in a building in which there was a pharmacist's shop or dispensary. Although it would seem as if it had been the intention of the Branch to prevent occurrences of this kind, the rule, as it existed, was not wide enough.

It was explained that much consideration had been given to this question in the past. The rule had been established to meet a definite set of circumstances and it had seemed that the expression "at a chemist's shop" was sufficient.

Two or three of the delegates from country districts pointed out that in some small towns medical practitioners found it advisable to have their consulting rooms some distance from their residences. At times it was very convenient to have these consulting rooms in the same building as a chemist's shop. This practice, it was claimed, had not led to abuse. It was argued that if a rule were made preventing a doctor from having his consulting room in a building in which there were business offices, as suggested in the motion, the Council would constantly be called upon to grant its sanction. After discussion the motion was withdrawn.

#### Fees for Medical Witnesses.

Dr. J. H. WILSON, on the instructions of the Western Medical Association, moved that the Council be asked to make an endeavour to obtain increased payment to medical witnesses and especially to those living in the country where they had to travel considerable distances. He supported his contention by citing an instance of hardship on a medical practitioner in the country who had been required to leave his district to attend the court at a considerable distance. A *locum tenens* had to be secured during the period of absence. All he had got was one guinea for giving evidence, one guinea a day for attendance and the actual amount of the railway fare. He had spent four days away from his practice and had lost twelve guineas.

The motion was seconded by Dr. C. A. F. CLARK. He had had similar experience. He thought that medical witnesses in criminal trials should be paid three guineas a day to enable them to provide the necessary *locum tenentes*.

Dr. L. FETHERSTON said that the existing travelling fees were often unsatisfactory, especially when the doctor's residence and the court were on the same railway line. The doctor was paid the railway fare, but in order to save time, he often had to use his car.

After others had related their personal experience, the motion was carried without opposition.

A proposal was then made that the Council should ask the authorities to amend the regulations so that medical men residing in the country might be paid two guineas a day for attendance, the actual cost of securing the services of a *locum tenens* and regular mileage. It was pointed out, however, that it would be useless to ask for an unfixed amount in regard to the charges of *locum tenentes*. Dr. C. A. F. CLARK therefore moved as an amendment that endeavours should be made to obtain three guineas a day for medical witnesses to cover all costs. This proposal was adopted.

#### Small Country Hospitals.

Dr. G. A. BUCHANAN (Central Southern Medical Association) moved:

That in view of the usefulness of the smaller country hospitals the Council be urged to resist any attempt by legislation to eliminate them or prevent their establishment, provided that such hospitals do not expect full or any subsidy.

The mover stated that some uneasiness existed in country districts concerning the policy of the Government in regard to hospitals. In certain small country towns where there was only one doctor, the existence of a hos-

pital was naturally to perform

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pital was to the advantage of the people. The practitioner naturally found it advantageous to have a suitable place to perform urgent operations.

It was pointed out that private hospitals would not be affected by any measure that might be introduced. The policy of the Government was not known. There was considerable overlapping and many of the smaller hospitals were not necessary. As far as had been ascertained it was not the intention of the Government to prevent the erection of small hospitals or the continuation of existing hospitals in the country, where these hospitals were needed. In Victoria an act had recently been introduced and the Hospitals Board had the power to close hospitals or to amalgamate two or more hospitals when it could be shown that such a course was desirable. It was assumed that similar powers would be given to the board by the measure about to be introduced in New South Wales. It was further anticipated that this measure would be a short one constituting a board with certain powers and making other necessary provisions, but leaving administrative details to be dealt with by means of regulations. In this way the development would continue under an elastic arrangement.

In view of the opinions expressed concerning the position of private or non-subsidized hospitals, an amendment was proposed to delete the words "Provided that such hospitals do not expect full or any subsidy." The amendment was carried.

DR. F. G. N. STEPHENS moved a further amendment that the motion should read as follows:

That in view of the usefulness of the smaller country hospitals in certain cases the Council be urged to resist any attempt by legislation to eliminate all such smaller country hospitals.

He pointed out that it was his purpose to prevent the absorption of the smaller country hospitals by the larger country hospitals. The amendment was seconded by Dr. Fetherston. In the course of the debate the excessive cost of maintenance of many small country hospitals was emphasized. The amendment was carried and was subsequently adopted as a substantive motion.

#### Lying-in Hospitals.

DR. T. W. LIPSCOMB moved on behalf of the Council:

That the following proposal, referred to this meeting by the Council, be considered, *viz.*:

That private hospitals licensed for lying-in cases only should be allowed to receive post-miscarriage cases requiring curettage or other uterine surgical operations, although not previously received for confinement.

He stated that he had been unaware until a short time before that women could not be admitted to private lying-in hospitals for curettage or other forms of treatment after miscarriage. He thought that this provision was detrimental to the interests of the patients of doctors in the distant suburbs and in the country. He contended that the nurses to whom the licences of lying-in hospitals were granted, were quite competent to manage patients admitted for miscarriage and therefore they should be competent to manage patients after miscarriage, even when minor surgical treatment was required. He admitted that the question of sepsis might present some difficulty, but he contended that the practitioner in charge would not recommend a patient for admission if she were infected.

DR. GEORGE ARMSTRONG seconded the motion that the matter be considered *pro forma* and seized the opportunity of speaking very emphatically against the proposal. He was convinced that it would be utterly against the public interest to alter the rule. Not only would there be the danger of covering up criminal abortion, but the question of sepsis was a very serious one. One woman suffering from septic infection might endanger every other inmate of the hospital. The nurses in these hospitals were often only trained for one year in obstetric nursing and had no gynaecological teaching. If

curettage were necessary or any other operative procedure, it would be better for the practitioner to perform it in the patient's home. It was often impossible to determine in the early stages whether the woman was septic.

DR. G. H. BARRON (Northern Suburbs Medical Association) opposed the proposal. He claimed that while obstetric nurses were usually very capable, they were not trained as surgical nurses. General hospitals and private medical and surgical hospitals were usually available.

Two members expressed their approval of the proposal on the grounds of convenience, but against this view it was urged that the arguments put forward by Dr. George Armstrong showed that it was not in the public interest. It was believed that private lying-in hospitals were sometimes used for this purpose, probably in ignorance of the meaning of the act. Dr. Simmons reported that opinions were divided in his Association. The minority had disapproved of the suggestion and had asked that their arguments should be stated. In the district there were four private lying-in hospitals with six, four, three and three beds respectively. The nurses attached to these hospitals were also engaged in out-door obstetric work. It was impossible for them to devote sufficient care to a surgical emergency. Nurses were at times carriers of infection from outside and even from patient to patient in the hospital. Moreover, the doctors could never be quite sure that the patient he was admitting was not infected. He had to remember that there were not only his own patients to be considered; there were also those of other practitioners.

DR. J. H. WILSON opposed the proposal on three grounds. The first was the risk of sepsis. The second was that by admitting women after miscarriage, they would be aiding the practice of the abortionist. In the third place they should not forget that some of these hospitals were under the charge of untrained registered nurses.

DR. A. A. PALMER (Council) opposed the suggestions very strongly. He was satisfied that the Department of Public Health would not consider any alteration of the rule. He dwelt on the impossibility of discovering whether a woman was septic or not in the early period after miscarriage. Whilst the rule might inflict some hardship on a few women, it was undoubtedly to the advantage of the majority. It was noted that in the *Private Hospitals Act, 1908*, the word "birth" included still-birth and miscarriage at any period.

The meeting decided by a large majority to oppose the suggestion.

#### Life Insurance Examination.

With the consent of the meeting DR. J. H. WILSON raised the question whether an extra fee should be charged when the blood pressure of a proponent for life insurance had to be estimated. Some of the life offices required this examination to be made.

DR. A. M. GLEDEN expressed the opinion that the taking of blood pressure readings had become a routine procedure in full life insurance examinations.

No action was taken.

#### Visit of Sir William Macewen.

DR. LAWES announced that Sir William Macewen, the President of the British Medical Association for the year 1922-1923, would shortly arrive in Sydney as his first port of call in Australia. It was a privilege to meet so distinguished a member of the medical profession. The Branch had determined to give a dinner in his honour on October 25, 1923, and had invited the Lieutenant-Governor of New South Wales, the Premier of the State and the Minister of Public Health to meet him. He hoped that as many members as possible would attend the dinner. The tickets would be two guineas each.

He also reminded those present that an important demonstration would be given by Dr. N. D. Royle and Professor J. I. Hunter at a meeting of the Branch to be held on October 26, 1923, at the University of Sydney. This demonstration would be in connexion with Dr.

Royle's researches on flaccid paralysis. Sir William Macewen would, he hoped, be present at the meeting.

Dr. Lawes thanked the delegates for their attendance. The Council appreciated the sacrifice they made in journeying to Sydney each year for this meeting. Each man represented a large number of medical practitioners in the different parts of the State. The meetings were of great value to the Council.

#### Votes of Thanks.

The members of the Council joined in the vote of thanks.

Dr. G. A. BUCHANAN moved a hearty vote of thanks to Dr. Lawes not only for his hospitality to the delegates, but also for the manner in which he had conducted the meeting. The delegates and the country associations recognized the value of these meetings to them.

The motion was carried and Dr. Lawes thanked Dr. Buchanan and the delegates.

#### Social Evening.

In the evening the members of the New South Wales Branch gathered to meet the delegates of the local associations. A pleasant evening was spent. Dr. G. H. ABBOTT gave a lantern lecture on rare coins and musical items were contributed by members of the Branch.

#### NOMINATIONS AND ELECTIONS.

THE undermentioned has been nominated for election as members of the New South Wales Branch of the British Medical Association:

- ARMSTRONG, HAROLD GILES, M.B., Ch.M., 1923 (Univ. Sydney), Railway Street, Chatswood.  
BARKLEY, ALFRED OSWALD, M.B., Ch.M., 1923 (Univ. Sydney), 13, Tahlee Street, Burwood.  
FLECK, CLAUDE CROFTON, M.B., Ch.M., 1923 (Univ. Sydney), William Street, Granville.  
GENTILE, SALVATORE UMBERTO, M.B., 1920 (Univ. Sydney), Lyons Road, Five Dock.  
LEAH, JOHN, M.B., Ch.M., 1923 (Univ. Sydney), 25, Mansfield Street, Glebe Point, Sydney.  
RYAN, FRANCIS PATRICK, M.B., Ch.M., 1922 (Univ. Sydney), Nowra.

THE undermentioned have been elected members of the Victorian Branch of the British Medical Association:

- BALL, LEONARD HUNT, M.B., B.S., 1923 (Univ. Melbourne), 782, Heidelberg Road, Ivanhoe.  
BROOME, GERALD DOUGLAS, M.B., B.S., 1923 (Univ. Melbourne), Cowes.  
CHARLTON, HAROLD WILLIAM, M.B., B.S., 1923 (Univ. Melbourne), Geelong.  
CHURCH, DOROTHEA VICTORIA, M.B., B.S., 1923 (Univ. Melbourne), Clendon Road, Toorak.  
CROWNSON, SIDNEY CADISH, M.B., B.S., 1923 (Univ. Melbourne), 10, Gatehouse Street, Parkville.  
EDWARDS, ERNEST RICHARD, M.B., B.S., 1923 (Univ. Melbourne), 15, Moorehouse Street, Malvern.  
GUTTERIDGE, NOEL MIDDLETON, M.B., B.S., 1923 (Univ. Melbourne), Orrong Road, Armadale.  
MCLEOD, NORMAN, M.B., B.S., 1923 (Univ. Melbourne), Prahran.  
MEAGHER, JOHN SHEEHY LUXFORD ALOYSIUS, M.B., B.S., 1923 (Univ. Melbourne), 69, Wattle Road, Hawthorn.  
PHILLIPS, SAMUEL HENRY, M.B., 1907 (Univ. Melbourne), 98, Wattletree Road, Malvern.  
REES, MAX ALFRED, M.B., B.S., 1923 (Univ. Melbourne), Warragul Road, Oakleigh.  
STEELE, WILLIAM HENRY GERRARD, M.B., B.S., 1923 (Univ. Melbourne), 6, Fermanagh Road, Camberwell.

## Congress Notes.

### AUSTRALASIAN MEDICAL CONGRESS (BRITISH MEDICAL ASSOCIATION).

THE Australasian Medical Congress (British Medical Association) will commence on Monday, November 12, 1923.

#### Final Arrangements.

The office of the Congress will be open for the issue of badges and other matters to Victorian members in the Medical Society Hall, Albert Street, East Melbourne, from November 5 to November 9, 1923, inclusive, between the hours of ten o'clock in the morning and four o'clock in the afternoon. On Saturday, November 10, 1923, the office will be transferred to the new Anatomy School buildings at the University of Melbourne, Madeline Street, Carlton, immediately opposite the end of Faraday Street. The office will remain open until Saturday, November 17, 1923. For the convenience of members arriving from other States by the Sydney express on Monday, November 12, 1923, the office will be transferred for the course of one hour from one o'clock to two o'clock in the afternoon to the room at the Town Hall, Melbourne, occupied by the Ladies' Hospitality Committee. Those who arrive before November 12, 1923, are requested to apply at the office of the Congress in the new Anatomy School buildings.

#### Opening Ceremonies.

All members of Congress are notified that, in accordance with the practice obtaining at the Annual Meetings of the British Medical Association, they are requested by the Executive Committee to wear academic dress at the opening of the new Anatomy School in the afternoon of November 12 and at the Inaugural Meeting of Congress in the Melbourne Town Hall in the evening of the same day at 8.30 o'clock.

The opening of the Anatomy School will take place at 2.30 o'clock in the afternoon. All who served as medical officers in the Australian Imperial Force, are permitted to wear uniform. As the unveiling of the War Memorial to the members of the Victorian Branch of the British Medical Association who lost their lives in the Great War, will take place immediately after the opening of the Anatomy School, the Committee of the War Memorial would be greatly gratified if as large a number of members of Congress as may find it convenient would wear their service uniforms on that occasion. If uniform is worn, academic dress should not be worn over it. Decorations may be worn with uniform at the function.

#### Ladies' Hospitality Committee.

By the courtesy of the Lord Mayor of Melbourne and the Lady Mayoress a convenient room has been placed at the disposal of the Ladies' Hospitality Committee of the Congress on the first floor of the Town Hall, Melbourne, adjoining the Lady Mayoress's reception room. Here various lists of excursions arranged for ladies accompanying members of Congress will be displayed. The ladies will be able to write their names on the lists for the several excursions and entertainments provided. A female attendant will be present and some members of the Ladies' Hospitality Committee will endeavour to be in the rooms at all times of the day.

#### Wives and Lady Relatives Accompanying Members.

Many members have failed to notify the General Secretary whether or not they will be accompanied by their wives or other lady relatives. Omissions of this kind necessarily result in disappointment, as invitations for important functions cannot be issued. It is doubtful whether additional invitations will be issued from Government House or from the Prime Minister's office. Every member of Congress is advised to attend to this matter without loss of time.

### Luncheon Arrangements.

The Executive Committee have arranged with the University caterer to provide a first-class luncheon for all members of Congress between the hours of one o'clock and two o'clock in the afternoon of Tuesday, November 13; Thursday, November 15; and Friday, November 16, 1923. The cost will be two shillings and sixpence per head. The Executive Committee is anxious to preserve the continuity of the Congress and the closest possible interrelation between its members. They therefore hope that all members will take luncheon at the University. On Tuesday, Thursday and Friday the work of the Sections begins at ten o'clock in the morning. At half-past twelve o'clock there will be an adjournment until two o'clock. The Sections will rise at five o'clock. Luncheons will also be provided on Wednesday, November 14, but as on that afternoon the members of Congress and wives and lady friends will be entertained by His Excellency the Governor-General at a garden party, it is anticipated that the number taking luncheon at the University on that day will be smaller than on the other days.

The meetings of the Sections will commence at half-past one o'clock on Thursday afternoon instead of at two o'clock and will terminate at four o'clock. Members will thus be enabled to attend the garden party given by the Acting Prime Minister and the Commonwealth Government.

### Congress Dinner.

Members of Congress wishing to attend the Congress Dinner in the Melbourne Town Hall on Thursday, November 15, 1923, must forward a cheque of one guinea to Dr. Zwar, 54, Collins Streets, Melbourne, without delay. They should also indicate the Section among whose members they wish to be placed.

### Railway Concessions.

The General Secretary finds it necessary to repeat the final arrangements made by the Railways Commissioners.

Delegates travelling from other States to attend the Congress will be issued single tickets for both the forward and return journeys at two-thirds of the single fare, provided that not less than six delegates travel from a particular State; the concessions will apply to the wife of a delegate if she accompanies her husband. They do not apply to any other person.

The tickets will be issued to enable delegates to arrive in Melbourne not earlier than Thursday, November 8, 1923, and to begin the return journey not later than Wednesday, December 12, 1923. The journey cannot be broken either way, except for one day in passing through a capital city.

The Local Congress Secretaries in the various States are arranging for railway concessions for their members travelling from any part of that State to the capital city *en route* for Melbourne. For instance, the Local Congress Secretary for Queensland advises that the concession mentioned above applies to any station in Queensland as long as there are six members travelling from that State, so that members travelling from Rockhampton, for example, will obtain the reduced rate right through to Melbourne.

Victorian country members will be allowed single tickets on both the forward and return journeys at half holiday excursion fares. No break of journey is allowed. They may arrive in Melbourne on or after Tuesday, November 8, 1923, and must leave Melbourne not later than Tuesday, November 20, 1923, on the return journey. This concession applies to the wife of a member accompanying her husband. It does not apply to any other person.

In all cases it is necessary for the member to apply to the Local Congress Secretary of his State for two railway concession vouchers for each person, one for the forward, the other for the return journey. Both of these concession forms must be presented at the Railway booking office when purchasing the ticket for the forward journey. Victorian country members must apply to the Honorary General Secretary. All members are warned that these

concession forms should be applied for not less than a week before the day they intend to travel. Otherwise they may experience considerable inconvenience.

### Returned Medical Officers' Dinner.

From the notifications already received it is estimated that two hundred and twenty to two hundred and fifty returned medical officers will be present at the Returned Medical Officers' Dinner at Anzac House, Collins Street, at 7.15 o'clock on the night of Tuesday, November 13, 1923. The Victorian returned medical officers hope to have as their guests on that evening as many returned medical officers as possible from the other States and from New Zealand.

In order to make the necessary catering arrangements the Committee arranging the dinner requests all visiting returned medical officers who have already joined or who intend to join the Congress and who will be present, to send their names to Dr. G. A. D. McArthur, 85, Spring Street, as soon as possible. Dinner jackets will be worn.

### Discussion on Tuberculosis.

On Saturday, November 17, 1923, in the morning there will be a combined meeting of all the Sections of Congress for the discussion on tuberculosis. The following programme has been approved.

(i.) STATISTICAL.—The incidence of tuberculosis in Australia in relation to such factors as age, occupation, sex and climate. *Opener*: Dr. J. H. L. Cumpston.

(ii.) PATHOLOGICAL.—The incidence of tuberculosis as shown by *post mortem* evidence in relation to age distribution and in relation to the part played by the bovine type of tubercle bacilli encountered in human beings. Included in this will be a brief reference to the extent of bovine infection in the various States of the Commonwealth. *Opener*: Dr. W. J. Penfold.

(iii.) CLINICAL.—An endeavour will be made to define a standard for the diagnosis of early tuberculous infection. Statistics will be presented in regard to the incidence of tuberculosis in persons belonging to selected and non-selected groups, as revealed by the von Pirquet test. *Openers*: Dr. S. A. Smith and Dr. S. F. McDonald.

(iv.) Control in relation to occupation, economic conditions, sanitation and environment: *Opener*: Dr. E. S. Morris.

(v.) Summary of the statistical, pathological, clinical and administrative findings, with indications for future effort. *Opener*: Dr. F. S. Hone.

The data for each of the above headings are being collected in the form of papers for presentation to the several Sections concerned. The speakers on November 17 will be in a position to present to the combined meeting of Sections the opinion of their respective Sections on the particular phases of the subject with which they will deal. At the conclusion of the meeting motions will be submitted to the meeting. If carried the resolutions will be sent to the Federal Committee of the British Medical Association in Australia in accordance with the regulations.

### Nomination of a Member.

In accordance with Regulation 4 (b) Dr. George Henry Taylor, Medical Officer of the Railways and Tramways Department, New South Wales, not being a member of the British Medical Association, has been nominated by Dr. R. H. Todd and Dr. A. A. Palmer for election as a member of Congress. His election is now in the hands of the Executive Committee.

### Obituary.

#### HAROLD LYTTON CUMMINGS.

THE sudden death of Dr. Harold Lytton Cummings which was announced in our issue of October 6, 1923, came as a shock to a wide circle of friends both in the medical profession and outside its ranks.



Harold Lytton Cummings was one of eight sons of the late W. H. Cummings, Director of the Guildhall School of Music, London. He was born in 1862 in Kent, the garden of England, and was educated at Dulwich College. Having selected medicine as his career he entered Saint Bartholomew's Hospital in 1878. Here he showed a natural aptitude for his chosen calling and on the completion of his course gained the diplomas of Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England.

After coming to Australia in 1886 he settled in Goulburn and practised in conjunction with the late Dr. Ganthe of that city. Subsequently he resided at Gunning, Braidwood and Leichhardt. It was while at Braidwood that he found his life's partner and married a daughter of the late J. Higgins of that town. His tastes were centred more in the country and it thus came about that he went further afield to Franklin on the Huon River in Tasmania. Here he laboured for sixteen years. Though Franklin is in the centre of one of Nature's most finished beauty spots, medical practice in the valley of the Huon is extremely strenuous. Harold Lytton Cummings did not spare himself. He soon succeeded in winning his way into the hearts of the people. They loved him for his kindness and quiet courtesy and trusted him on account of the soundness of his clinical knowledge. The long journeys in the mountainous country eventually had a bad effect on his health and when, acting under medical advice, he returned to New South Wales in 1920 the people of the Huon district gave ample evidence of regret at his departure. After spending some time recuperating at Thirroul he essayed to take up practice again at Northbridge in 1921. His health seemed to be better and he could not resist the call of the country. The result was that he went to Nowra a few months ago and here his death took place in a sudden and unexpected manner.

On the outbreak of war Harold Lytton Cummings, though unable to bear the more exacting burden of active service, had the proud satisfaction of seeing his three sons take part in the nation's struggle. All three joined the Air Force. The eldest is permanently injured as a result of a flying accident. The second son was killed in action and the youngest, an officer in the Royal Australian Air Force, is at present at Woolwich, England, undergoing a special course of training.

By the death of Harold Lytton Cummings the medical profession has lost one who always sought in a quiet and unobtrusive way to uphold the best traditions of practice in the most important of all ranks, that of the general practitioner. Much sympathy is offered to his widow who survives him.

#### CHARLES CECIL HUMPHRIES.

THE death of Dr. Charles Cecil Humphries which was announced in our issue of October 6, 1923, removed at the inception of his career one who had given promise of a successful and useful life as a medical practitioner.

Charles Cecil Humphries was born in Belfast, Ireland. He was the son of the late Charles Humphries, a medical practitioner of Bangor, Ireland, and was educated at Ulster Provincial School and Queen's College. At school he was successful at games and was the winner of many trophies for swimming, running and jumping. Having chosen to follow his father's footsteps he entered the Medical School at Dublin University in 1911. Unfortunately his sojourn at Dublin University was short lived, for he suffered a serious breakdown in health and was compelled to relinquish his studies. Soon after this he came to Australia and feeling that he was equal to the task he entered the Medical School at the University of Sydney. Here he straightway gave evidence of his ability. He gained a high place in all examination lists and was awarded the John Harris Scholarship for proficiency in the subjects of the third year examination and the Cliphsham Memorial Prize for operative surgery. For five

months prior to graduation he acted as resident medical officer at Sydney Hospital, under the then existing war arrangements.

Charles Cecil Humphries was one of those who eagerly responded to his country's call in that period of the war when medical officers were so urgently needed. No sooner had he completed his course than he joined the Australian Imperial Force. This was in July, 1916. In November, 1916, he sailed as senior medical officer of the steamship *Argyllshire*. Misfortune began to dog his footsteps again and he became ill in the tropics. He suffered severely from asthma. Having arrived in England he was able to "carry on" and was sent to France. He was attached to the First Field Ambulance for a while, but later on was sent to the Third Casualty Clearing Station. As anaesthetist and radiographer he did good work until an attack of pneumonia caused his evacuation to Rouen and thence to "Blighty" with double pneumonia. He was returned to Australia as unfit for further service in January, 1918. It was held that he was suffering from pulmonary tuberculosis. He was well enough to take up practice in Jerilderie in 1918 and in 1919 went to Wauchope on the north coast of New South Wales. Bronchial asthma affected him so severely in this locality that he was compelled to leave. He then went to Paddington, Sydney, where he lived till illness again attacked him in July, 1923. He was sent to the Prince of Wales's Hospital and died of pulmonary tuberculosis after an illness of eight weeks.

Of a naturally retiring disposition Charles Cecil Humphries made few friends, but those whose privilege it was to enter the circle of friendship, found in him a loyal companion and one whom they could trust. Gardening and reading were his chief recreations; more strenuous exercise was not possible for him. Charles Cecil Humphries had faced the rigors of warfare manfully and with courage and it can be truly said of him that he his duty to the utmost. Much sympathy will be extended to his widow.

#### ROBERT DICKIE McMASTER.

It is with regret that we have to announce the death of Dr. Robert Dickie McMaster which occurred at Wahroonga, New South Wales, on October 14, 1923.

#### LAVINGTON GREY THOMPSON.

We regret to announce the death of Dr. Lavington Grey Thompson which occurred at Launceston, Tasmania, on October 24, 1923.

### Correspondence.

#### DERMATITIS FROM EUCALYPTUS TREES.

SIR: In further reference to this matter, might I state that I have today received a note from Mr. J. H. Maiden, Government Botanist, in which he states that he has written a series of articles to the *Agricultural Gazette* on "Plants with Cause Irritation of the Skin." One of these (Volume XX., page 111 and page 1073) includes the eucalypts. In his "Forest Flora of New South Wales," Part XLIX., he has an article (largely a reprint of one of his *Agricultural Gazette* series) on "Some Timbers which Cause Irritation of the Skin and Mucous Membranes" and on page 175, eucalypts are dealt with. Mr. Maiden adds that the supposed poisonous nature of jarrah wood was traced to some logs of karri (*Eucalyptus diversicolor*) which were treated by the Powellizing process in which arsenic is used, and it is believed that the men who carried these logs were affected by the arsenic.



He concludes by doubting very much whether Eucalyptus timber is really toxic.

Yours, etc.,

JOHN MACPHERSON.

175, Macquarie Street, Sydney,  
October 17, 1923.

SIR: In your issue of September 8, 1923, page 265, Dr. John MacPherson writes on the above question and quotes the article by Mr. J. H. Maiden, published in April, 1904. I have since consulted articles by Mr. Maiden in the *Agricultural Gazette of New South Wales* on "Plants which Cause Irritation of the Skin" (Volume XX., page 111 and page 1073) and his "Forest Flora," Part XLIX. Now as to the rash said to have been caused by the "spotted gum" (*Eucalyptus maculata*), the evidence seems to me to be inconclusive. Mr. Maiden wrote to a number of sawmills in the country where this gum was largely handled. Most had never heard of any rash and only one recorded an authentic case where a man not only was subject to an extensive dermatitis if he handled the tree, but even living in the proximity of the trees caused it and he had to leave his home in the country and return to the city. This latter circumstance throws great doubt on whether the spotted gum had anything to do in the matter at all. Similarly with *Eucalyptus hemiphloia* (grey box) the evidence seems to be inconclusive. The timber is said by Mr. Maiden to cause a rash. With regard to *Eucalyptus marginata* (jarrah), Mr. Maiden quotes an article in the *Perth Western Mail*, January 29, 1910, where it was stated that the union lumpers refused to handle sleepers made from this timber as the poison on them was said to influence the flesh wherever it touched, faces, hands and arms swelling up. When dry matters are worse as it gets on the bodies and men have to lie up. This must be taken with a considerable amount of reserve, just as one takes the exaggerated reports of shearers on the dangers of handling wet sheep. Also it must be remembered that in Western Australia sleepers are largely "Powellized" and the inferior timber karri is treated with arsenic and is then indistinguishable from jarrah timber. If cases of dermatitis occurred, then they may have been due to the Powellizing.

To go back to *Eucalyptus maculata* and *Eucalyptus hemiphloia*, the latter grows in thousands about the outer Sydney suburbs and is daily handled by timber getters and burnt by housewives as box wood, yet I have never seen a case of dermatitis caused by it nor does any such seem to have been recorded in the medical journals. The broad leathery leaves of this tree are smooth and destitute of hairs. The yield of oil, according to Baker and Smith, amounts to only 0.58%, so the constituents are not present in amount sufficient to cause irritation.

*Eucalyptus maculata* (spotted gum) occurs extensively along the New South Wales coast and its timber is largely used commercially, especially for shipbuilding. A patch of it occurs at Smithfield near Sydney. The leaves especially in the young state are rough and covered with minute stellate hairs. The amount of oil yielded is very small, being only 0.23% and it has no irritating constituents, so that the chance of this oil causing dermatitis by handling the leaves is infinitesimal.

Since beginning this latter I met a man from Smithfield who has been handling these two species of trees all his life and on inquiry, he told me that he has known cases of irritation from handling *Eucalyptus maculata*, but only when it was infested by certain hairy caterpillars and he put down the transient dermatitis to these or their poisonous excretions. The only irritation from *Eucalyptus hemiphloia* was caused by handling the bark. Now this is very fibrous and comes off in short sharp spicules which readily penetrate the skin. Any irritation caused by these could thus be attributed to a mechanical not a specific action. Many eucalyptus species have small stellate hairs on the juvenile leaves and branchlets and it is just possible these may cause irritation of the skin when handled, though personally I have handled with im-

punity thousands of the seedlings in carrying out an investigation on the evolution of the cotyledon leaves. Perhaps this correspondence may serve to bring forward definite cases, but in the meantime I hold that not sufficient evidence has been adduced to prove that any eucalyptus species is as yet known to produce a specific dermatitis venenata.

Yours, etc.,

CUTHBERT HALL.

Glenrowan, Parramatta,  
October 28, 1923.

## Proceedings of the Australian Medical Boards.

QUEENSLAND.

THE undermentioned have been registered, under the provisions of the *Medical Act of 1867*, as duly qualified medical practitioners:

BALLANTINE, JANE MARGARET, M.B., Ch.M., 1923, (Univ. Sydney), Gatton.

BURTON, RUSSELL MELHAM, L.R.C.P., L.R.C.S. (Edin.), L.F.P. et T., 1917 (Glasgow).

GORDON, JAMES BRUCE, M.B., Ch.M., 1922 (Univ. Sydney), Lady Bowen Hospital, Brisbane.

## CONFERENCE OF SCHOOL MEDICAL OFFICERS.

A CONFERENCE of medical officers attached to the Departments of Public Instruction in the several States will be held in Melbourne from November 7 to November 10, 1923. On the opening day the subject for discussion will be the relationship of medical inspection to preventive medicine. The delegates from New South Wales will open this discussion. In the afternoon Dr. Gertrude Halley will open a discussion on mental hygiene and truancy. Demonstrations and a visit of inspection to the Special School, Bell Street, Fitzroy, will also take place on the first day.

On November 8, 1923, the subject for discussion in the morning will be "Uniform Annual Reports, Uniform Notification of Defects and Uniform Control of Infectious Diseases." In the afternoon there will be discussion on malnutrition and anæmia. The members will visit the Deaf and Dumb Institution and the Open Air School at Blackburn on this day.

On November 9, 1923, the Victorian members, Dr. Jane S. Grieg and Dr. Eileen Fitzgerald, will initiate a discussion on health habits and later there will be discussions on stammering and preventive methods in dental caries. The members will visit the Institute for the Blind and the School Dental Centre, St. Kilda Road.

On November 10, 1923, there will be a discussion on the question of sick leave for teachers. The plan to be adopted at this conference is to avoid the reading of set papers, but to invite debate by allotting ten minutes to the openers of the discussions and five minutes to subsequent speakers.

## THE NOBEL PRIZES IN MEDICINE.

It is announced that the Nobel Prizes for Medicine for the year 1923 have been awarded to Professor J. J. R. Macleod, of the Department of Physiology at the University of Toronto, and Dr. F. G. Banting, also of the University of Toronto, for their work in connexion with the physiology of the islands of Langerhans of the pancreas and the preparation of an extract of insular cells, known as "Insulin." The Nobel Prizes are awarded by the trustees of the estate of the late Alfred Nobel. Prizes

are given to those who have contributed most largely to the common good in the realms of physics, chemistry, medicine or physiology and literature and toward the preservation of peace. Among the recipients of the Nobel Prizes for Medicine or Physiology are Robert Koch, Ramon y Cajal, C. Golgi, A. Laveran, Paul Ehrlich, E. Metchnikoff, T. Kocher, A. Kossell, A. Gullstrand, Alexis Carrel, Charles Richet, R. Barány, J. Bordet and A. Krogh.

The award is made by the Stockholm Faculty of Medicine. The value of the Prizes is about £6,500 each.

### Books Received.

**AROMATICS AND THE SOUL: A STUDY OF SMELLS**, by Dan McKenzie, M.D. (Glasgow); 1923. London: William Heinemann (Medical Books), Limited; Demy 8vo., pp. 174. Price: 7s. 6d. net.

**HISTORY OF THE GREAT WAR BASED ON OFFICIAL DOCUMENTS: MEDICAL SERVICES—PATHOLOGY**, Edited by Major-General Sir W. G. Macpherson, K.C.M.G., C.B., LL.D.; Major-General Sir W. B. Leishman, K.C.M.G., C.B., F.R.S., LL.D.; and Colonel S. L. Cummins, C.B., C.M.G., LL.D.; 1923. Edinburgh: 120, George Street; His Majesty's Stationery Office; Demy 8vo., pp. 600, with illustrations including two coloured plates. Price, post free: 21s. 9d. net.

**REGIONAL ANESTHESIA: ITS TECHNIC AND CLINICAL APPLICATION**, by Gaston Labat, M.D., with a Foreword by William J. Mayo, M.D.; 1923. Philadelphia and London: W. B. Saunders Company; Melbourne: James Little; Royal 8vo., pp. vii. + 496, with 315 illustrations. Price: 38s. net.

**A TEXT BOOK OF THERAPEUTICS INCLUDING THE ESSENTIALS OF PHARMACOLOGY AND MATERIA MEDICA**, by A. A. Stevens, A.M., M.D.; 1923. Philadelphia and London: W. B. Saunders Company; Melbourne: James Little; Royal 8vo., pp. 793. Price: 32s. 6d. net.

**BRONCHOSCOPY AND ESOPHAGOSCOPY: A MANUAL OF PERORAL ENDOSCOPY AND LARYNGEAL SURGERY**, by Chevallier Jackson, M.D., F.A.C.S.; 1922. Philadelphia and London: W. B. Saunders Company; Melbourne: James Little; Royal 8vo., pp. 346, with four plates and 114 illustrations. Price: 27s. 6d. net.

**HOMOEOPATHY**, by Fraser Mackenzie, C.I.E. London: The Homeopathy Publishing Company; Crown 8vo., pp. 96.

**OFFICIAL YEAR BOOK OF THE COMMONWEALTH OF AUSTRALIA: Number 16; 1923**. Prepared under instructions from the Minister of State for Home and Territories by C. H. Wickens, F.I.A., F.S.S., Hon. M.S.S., Commonwealth Statistician; Edited by John Stonham, M.A.; Melbourne: Albert J. Mullett, Government Printer; Royal 8vo.

**SURGERY OF THE SPINE AND EXTREMITIES: A TEXT BOOK FOR STUDENTS AND PRACTITIONERS**, by R. Tunstall Taylor, B.A., M.D., F.A.C.S.; 1923. Philadelphia: P. Blackiston's Son and Company; Royal 8vo., pp. x. + 550, with 604 illustrations. Price: \$1.50.

**THE HEART: ITS PHYSIOLOGY, PATHOLOGY AND CLINICAL ASPECTS**, by Sclian Neuhoof, B.S., M.D.; 1923. Philadelphia: P. Blackiston's Son and Company; Royal 8vo., pp. xxi. + 701, with 300 illustrations.

**THE OPHTHALMIC YEAR BOOK: Volume XIX**, Edited by Edward Jackson and William H. Crisp; July, 1923. Chicago: The Ophthalmic Publishing Company; Royal 8vo., pp. viii. + 390.

### Medical Appointments.

**DR. CHARLES BADHAM (B.M.A.)** has been appointed Medical Officer for Industrial Hygiene, Office of the Director-General of Public Health, New South Wales.

**DR. REX HYLTON** has been appointed to be a Resident Medical Officer at the Adelaide Hospital.

**DR. P. B. McCUMISKY, DR. JOHN KIRKPATRICK (B.M.A.)** and **DR. D. D. McGOWAN (B.M.A.)** have been appointed to be Public Vaccinators respectively at Minyip, Mount Egerton and Gordon and Yea, Victoria.

**DR. N. L. CASS (B.M.A.)** has been appointed Resident Medical Officer at Boyup Brook and Medical Officer to the Upper Blackwood Soldiers' Memorial Hospital, Western Australia.

**DR. F. T. A. LOVEGROVE (B.M.A.)** has been appointed District Medical Officer and Public Vaccinator at Dumbleyung, Western Australia.

### Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney	Australian Natives' Association Ashfield and District Friendly Societies' Dispensary Balmain United Friendly Society's Dispensary Friendly Society Lodges at Casino Leichhardt and Petersham Dispensary Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney Marrickville United Friendly Societies' Dispensary North Sydney United Friendly Societies People's Prudential Benefit Society Phoenix Mutual Provident Society
VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne	All Institutes or Medical Dispensaries Australian Prudential Association Proprietary, Limited Mutual National Provident Club National Provident Association
QUEENSLAND: Honorary Secretary, B. M. A. Building, Adelaide Street, Brisbane	Brisbane United Friendly Society Institute Stannary Hills Hospital
SOUTH AUSTRALIA: Honorary Secretary, 12, North Terrace, Adelaide	Contract Practice Appointments at Renmark Contract Practice Appointments in South Australia
WESTERN AUSTRALIA: Honorary Secretary, Saint George's Terrace, Perth	All Contract Practice Appointments in Western Australia
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington	Friendly Society Lodges, Wellington, New Zealand

### Diary for the Month.

- Nov. 9.—New South Wales Branch, B.M.A.: Clinical Meeting.
- Nov. 9.—Queensland Branch, B.M.A.: Council.
- Nov. 9.—South Australian Branch, B.M.A.: Council.
- Nov. 13.—New South Wales Branch, B.M.A.: Ethics Committee.
- Nov. 14.—Victorian Branch, B.M.A.: Last Date for Nomination of Council; Election of Scrutineers.
- Nov. 14.—Western Australian Branch, B.M.A.: Council.
- Nov. 14.—Melbourne Pediatric Society.
- Nov. 20.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
- Nov. 20.—Illawarra Suburbs Medical Association, New South Wales.
- Nov. 21.—Victorian Branch, B.M.A.: Council; Nomination of Representative of Group on Council, London.
- Nov. 21.—Western Australian Branch, B.M.A.: Branch.
- Nov. 22.—Brisbane Hospital for Sick Children: Clinical Meeting.
- Nov. 23.—Queensland Branch, B.M.A.: Council.

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